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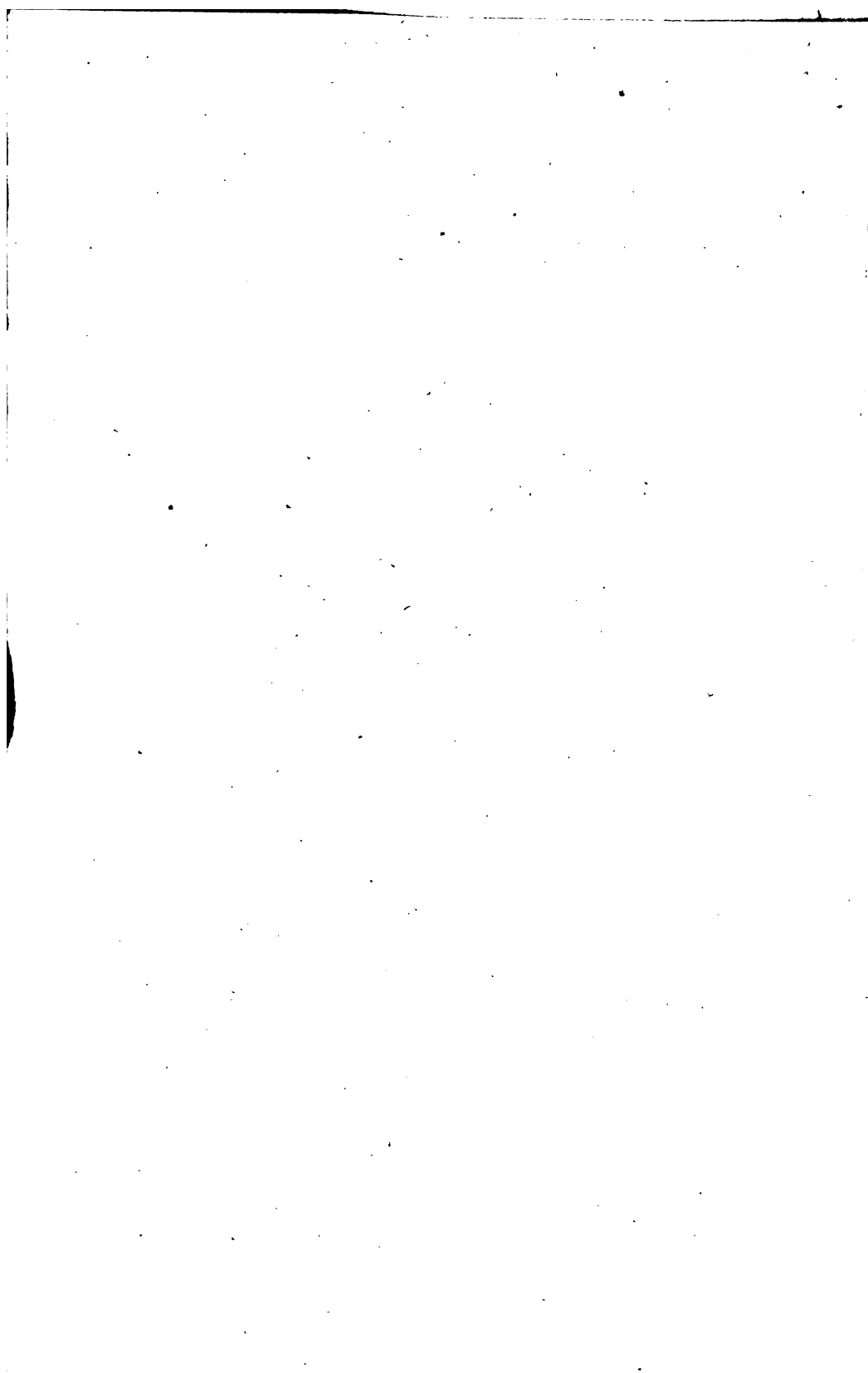
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EL PASO DAM AND ELEPHANT BUTTE DAM.

TESTIMONY

191
SUBMITTED TO THE

COMMITTEE ON FOREIGN AFFAIRS

ON

BILL (H. R. 9716) TO PROVIDE FOR THE EQUITABLE DISTRIBUTION
OF THE WATERS OF THE RIO GRANDE RIVER BETWEEN THE
UNITED STATES OF AMERICA AND THE UNITED STATES OF
MEXICO, AND FOR THE PURPOSE OF BUILDING AN
INTERNATIONAL DAM AND RESERVOIR ON SAID
RIVER AT EL PASO, TEX.

WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1901.

MARCH 19, 1900.—Mr. Stephens introduced the following bill; which was referred to the Committee on Foreign Affairs, and ordered to be printed.

A BILL to provide for the equitable distribution of the waters of the Rio Grande River between the United States of America and the United States of Mexico, and for the purpose of building an international dam and reservoir on said river at El Paso, Tex.

Whereas the Republic of Mexico has made reclamation of the United States to the Secretary of State, through its legation in Washington, for a large indemnity for water alleged to have been taken and used by the citizens of the United States in Colorado and New Mexico, on the head waters of the Rio Grande, to which citizens of Mexico had right by prior appropriation, in violation of the spirit of article seven of the treaty of peace of Guadalupe Hidalgo; and

Whereas an investigation directed jointly by the State Departments of the two Republics and carried out by the International Boundary Commission organized under the convention of March first, eighteen hundred and eighty-nine, discovered the fact that the flow of the river has gradually diminished for the past fifteen years in an increasing ratio, so that the ordinary summer's flow in the lower river is inadequate to supply the wants of irrigation, domestic, and other purposes, as has been supplied in previous years; and

Whereas a remedy has been proposed by the two Governments for this deficiency by impounding in an international dam and reservoir, near the boundary line between the two Republics, the annual flood waters of the spring season, which are greatly in excess of the wants of irrigation, domestic, and other purposes in those seasons, such waters to be equitably distributed between the two Republics; and

Whereas it was afterwards discovered that other like projects of large dams and reservoirs were contemplated above said proposed international dam and reservoir; and

Whereas the two Governments jointly directed the International Boundary Commission hereinbefore mentioned to investigate and report upon the feasibility of the project; and

Whereas said commission reported that, in their judgment, the project was feasible, but that the flow was insufficient for more than one reservoir; and

Whereas the two Governments were unable to agree upon the construction of said proposed international dam and reservoir until some method of restraining the building and use of other dams and reservoirs which would destroy the usefulness of said proposed international dam and reservoir has been devised: Now, therefore,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That nothing in the acts of March third, eighteen hundred and ninety-one, January twenty-first, eighteen hundred and ninety-five, February twenty-sixth, eighteen hundred and ninety-seven, and May eleventh, eighteen hundred and ninety-eight, shall be so construed as to authorize the appropriation and storage of the waters of the Rio Grande or its tributaries in the Territory of New Mexico to which others have right by prior appropriation; and every person and every corporation which shall be guilty of thus unlawfully appropriating and storing said waters in this act mentioned shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not exceeding five thousand dollars or by imprisonment (in the case of a natural person) not exceeding one year, or by both such punishments, in the discretion of the court. The unlawful appropriating and storing of water in this act mentioned may be prevented, and the dam, reservoir, or other means used for impounding the water may be removed by the injunction of any circuit court exercising jurisdiction in any district in which said water may be appropriated or stored, and proper proceedings in equity to this end may be instituted under the direction of the Attorney-General of the United States.

SEC. 2. That the Secretary of State is hereby authorized to proceed with the consummation of the proposed treaty between the United States of America and the United States of Mexico, and if the United States of Mexico shall accept the construction of the proposed dam and reservoir, with the conditions that the flood water impounded by it shall be equally distributed between the two countries as liquidation of all past and future claims for water appropriated in the past or to be appropriated in the future by citizens of the United States otherwise than by impounding it in large dams and reservoirs in New Mexico, then the Secretary of State is further authorized to proceed with the construction of said dam and reservoir according to the plans and specifications submitted in the report of the International Boundary Commission, as published in Senate Document Numbered Two hundred and twenty-nine, Fifty-fifth Congress, second session, and the sum of two million three hundred and seventeen thousand one hundred and thirteen dollars and thirty-six cents is hereby appropriated for that purpose.

JUN 27 1922

EL PASO DAM AND ELEPHANT BUTTE DAM.

SUBCOMMITTEE, COMMITTEE ON FOREIGN AFFAIRS,
HOUSE OF REPRESENTATIVES,
Washington, D. C., Friday, May 25, 1900.

The subcommittee met at 10.30 o'clock a. m., Hon. Joel P. Heatwole in the chair.

Present: Representatives Hitt, Heatwole (chairman), Brown, Dinsmore, and Burleson.

Present, also, Representative John H. Stephens, of Texas; also Messrs. H. B. Ferguson, D. N. Marron, Summers Burkhart, and Thomas S. Hubbell, representing the Territory of New Mexico.

The CHAIRMAN (MR. HEATWOLE). The subcommittee has met, gentlemen, to hear the committee from the Territory of New Mexico in regard to House bill 9710, which is entitled "A bill to provide for the equitable distribution of the waters of the Rio Grande River between the United States of America and the United States of Mexico, and for the purpose of building an international dam and reservoir on said river at El Paso, Texas."

We will be very glad to hear from the committee.

STATEMENT OF H. B. FERGUSON, ESQ.

MR. FERGUSON. May it please the gentlemen of the committee, we are here in consequence of the action of the Territory of New Mexico, which regularly called a convention for the purpose of taking action on this bill (H. R. 9710), the title of which has been read by the chairman of the subcommittee. This bill was introduced some time ago by Hon. John H. Stephens, representing the El Paso district of Texas in Congress; and straightway an agitation began in the Territory, which finally culminated in the issuance by the governor of a call of the Territorial convention to consider the question. That convention was a very large and influential one. It met at Albuquerque on the 15th of May and passed resolutions, copies of which, I think, have been forwarded to the members of this committee; and among other things it provided that the governor should appoint and regularly commission twelve gentlemen to come to Washington in person and protest against the passage of this bill.

We are here in pursuance of that duty. The four of us who are here are members of the committee of twelve commissioned regularly by the governor. Another one of our number, former Associate Justice of the Supreme Court of New Mexico Freeman, who was judge of the supreme court of that Territory under Mr. Harrison's Administration, we have every reason to believe is in town, but we can not find him yet.

The others will probably be on. Our information is that at least eight or ten, altogether, will be here. But we asked the chairman of the subcommittee to give us this hearing to-day because there was an intimation from him that he might have to leave the city to-morrow, and we thought we could present the case, although all the members of the delegation are not here.

The time is too short to make anything like an extended argument. In the Fifty-fifth Congress a convention or draft of treaty was submitted by the then Mexican minister, which is substantially quoted or referred to in this bill, proposing a bill "to provide for the equitable distribution of the waters of the Rio Grande." That is the innocent title of the bill. At that time I appeared two or three times before Mr. Day, who was then Secretary of State—

Representative BROWN. In what cap city, please?

Mr. FERGUSON. I was then a Delegate from New Mexico in the Fifty-fifth Congress, and at that time I am sure that he had decided against any such treaty.

Subsequent to that a bill was introduced in Congress authorizing the Secretary of State to proceed to consummate that treaty. I believe I had better read that bill, because we can not on account of lack of time make anything like an extended argument, and after stating the capacity in which we appear, we simply desire to call to your attention the very great interest which all the people of New Mexico have in this bill. While all of you are not far Western men the subject of irrigation has been so frequently before Congress of late that you can very readily realize that in a country where no agricultural product can be raised except by irrigation (as is the case in New Mexico), irrigation is the very life of the people.

The Rio Grande Valley has been settled by the ancestors of its present population for two hundred years, and during all of that time the people have lived by taking water out of the Rio Grande for irrigation purposes. It is absolutely the foundation of our very life.

Now, there has lately been a very great accretion or addition to the agricultural development of Colorado, north of us. The Rio Grande runs through Colorado, crosses the line, and runs down through about the center of the Territory, passing out into Texas at El Paso, and below that point becoming the boundary between Old Mexico and Texas.

I think I had better read this bill, because its terms are certainly very drastic, and I want to call to the attention of the subcommittee the consequences which will ensue to our Territory in case this bill is put in force, because of the very great taking out of water in Colorado. Before beginning to read the bill, I want to come to that point, because that is the gist of our complaint.

It has lately been noted in the public press that the State of Kansas, through its attorney-general, has attempted to get some relief against Colorado on account of the immense amount of water taken out of the Arkansas River by that State for irrigation purposes. The value of the agricultural product of Colorado surprised me very much when I read it a few years ago, especially as compared with its mineral output. The whole world is resounding with the fame of Colorado as a producer of the precious metals; but the agricultural production of the State during the last few years has become greater in money value than its precious-metal production.

The people of Colorado have taken so much water out of the Arkansas River that quite lately there has been a great agitation in the State of Kansas to devise some means to protect the interests of the people in the State of Kansas who had theretofore used the water from the Arkansas River and who lived by means of irrigation, as we do in New Mexico. They tried to devise some means of equitably dividing the water there, as this bill innocently proposes here. I do not know just what the result of that controversy will be, but the matter is now the subject of agitation between those two States. We, as you know, are but a Territory.

Now, there is one thing in this bill which I want to call to your attention, and if the honorable gentleman who introduced it will enlighten us on that point, the information will be very gratefully received by us.

The title of the bill is "A bill to provide for the equitable distribution of the waters of the Rio Grande River between the United States of America and the United States of Mexico, and for the purpose of building an international dam and reservoir on said river at El Paso, Texas."

The first whereas is what I want to call to your attention:

Whereas the Republic of Mexico has made reclamation of the United States to the Secretary of State, through its legation in Washington, for a large indemnity for water alleged to have been taken and used by the citizens of the United States in Colorado and New Mexico, etc.

Now, when we come to the enacting clause, we find it to be as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That nothing in the acts of March third, eighteen hundred and ninety-one, January twenty-first, eighteen hundred and ninety-five, February twenty-sixth, eighteen hundred and ninety-seven, and May eleventh, eighteen hundred and ninety-eight, shall be so construed as to authorize the appropriation and storage of the waters of the Rio Grande or its tributaries in the Territory of New Mexico.

It leaves out Colorado altogether. Is that because we are supposed to be helpless, as a Territory, without any representation either in the Senate or in the House, while Colorado has two strong representatives in each body? At all events, just as Colorado has caused this great agitation in the State of Kansas, through the effort on the part of the people of Kansas to protect themselves from the undue use of the waters of the Rio Grande in the State of Colorado, so we have, from year to year, with an increasing burden, seen Colorado take more and more water from that river. While formerly in the Mesilla Valley, which is or has been in the past one of the garden spots of the whole West, there was, from the natural flow of the water in the Rio Grande, an abundance of water for agricultural purposes, by means of which that valley has been developed into a fruit, alfalfa, corn, and wheat raising section second to none in the United States (because the valley of the Rio Grande, when properly watered, is as fertile as the valley of the Nile), now the farmers of that valley are without water from a month to six weeks in every year because of the increasing quantity that is taken out in Colorado; and whereas in former years the waters of the Rio Grande went, unimpaired for irrigation purposes, clear to the Mesilla Valley, 200 miles and over below Albuquerque, I myself have in the last two or three years seen my alfalfa suffer for water. I

have seen my fruit trees in a little farm of 3 or 4 acres which I have right near the city of Albuquerque suffering and dying for water 200 miles north of that point. And why? Because Colorado has made such a great inroad on the amount of water that is allowed to cross the line between Colorado and New Mexico.

This bill proposes simply to prohibit us from taking any more water than we now have appropriated; or, rather, it is worded in a little different way. It prohibits us from impairing the flow of water to those in Texas who had theretofore appropriated it. But we are between the upper and the nether millstone. If this bill is enforced, and Colorado is permitted to hold even the water she takes now, it will be but a short time before absolutely vested rights will be destroyed, and the valley of New Mexico will be made a desert. If we are prohibited from taking a drop of the little water that now escapes from Colorado and her immense irrigation enterprises (which are enlarging every year) and is allowed now to cross the line into New Mexico in order to fill this dam at El Paso for the benefit of the citizens of old Mexico, where will we be? On the face of the bill the gentlemen say: "We do not propose to interfere with vested rights; we propose to recognize your prior appropriation of water. We are not after that. You can keep what you have; but you are not allowed to increase the irrigated districts in New Mexico."

That is ostensibly the object of this bill. Shall we be put in that attitude by the Congress of the United States in behalf of citizens of old Mexico? Shall we be put in that attitude by the Congress of the United States in behalf of foreign citizens? Will Congress say that they can develop old Mexico, but we can not develop New Mexico any further?

Even stating the proposition in that way, we have a just cause to come here and protest. But that is not "the meat in the cocoanut," gentlemen. The plain effect of this bill, which makes it a criminal offense for us to take water out of a river that flows over 500 miles through the Territory of New Mexico from north to south, is to absolutely reverse the law of riparian rights. We are prohibited from taking from the river any more water than we now have gotten. From one standpoint—their standpoint—it seems to be fair to leave us with our vested rights in water heretofore appropriated; but when you consider it in connection with the fact (which is absolutely uncontroverted and uncontrovertible) that Colorado is vastly increasing her irrigation enterprises year by year you will see what the effect of this bill will be. On the south we are prohibited not only from taking any more water, but from building dams to catch even the storm water in the Rio Grande or in any of its tributaries. We are prohibited from reclaiming any more land along the banks of any of these little rivulets that begin up in the mountains, along which we now have prosperous farms. Not only that, but we are prohibited from supplying the deficiency; and that is how we have lived during these years. We have lived notwithstanding the aggressions of Colorado on the north of us. Why? Because we have a big rainy season in New Mexico in the months of July, August, and September; because, almost always, in the month of May, when the sun first begins to get warm and melt the snows, we have something like a flood. And in the Fifty-fifth Congress this gentleman (Mr. Stephens) came to me and asked me, because of my acquaintance with the Rio Grande, to help him get an

appropriation through Congress (and he got it through) for \$10,000. For what? To recompense the poor citizens of the city of El Paso who, by a great flood which came down the Rio Grande in May, 1897, had lost their little homes because the river went out of its banks and flooded everything.

Now, by virtue of being able to catch those storm waters, we have, during the past years, been able to live in spite of the aggressions of Colorado. We have constructed little dams, in which we catch the storm water and save it until the dry season comes in June and July, when the corn and wheat and alfalfa and fruit need water, and then we get it from this source. This bill prohibits us from ever building another dam in the Rio Grande. Then there is a natural drain from the watersheds which eventually finds its way into the Rio Grande. The beds of the little tributaries that come into it are where the storm waters flow, and if, as provided in this bill, we can not hereafter build any more dams for the purpose of catching those storm waters, and Colorado is permitted to take all the water it pleases (and there seems to be no way in which Kansas, with all its powerful representation in the Senate and in the House, can check Colorado; its officials seem now at a loss to get a legal remedy to protect them against Colorado along the valley of the Arkansas in Kansas), what can we, in our helpless Territory, do except what we are doing—appealing to the sense of justice of the Congress of the United States? We want justice, that is all. We have no vote on which to trade or use as a club, but we simply come to you and explain our awful situation in New Mexico. We have had that water in the past. We have had the right, under the general law of riparian rights, to take the water that flows down for domestic purposes, to live with and to live on. Under the terms of this bill we can not supply the deficiency by building dams, either in the bed of the Rio Grande or in the beds of any of its tributaries, and if we attempt to do so the man who attempts it is subject to a criminal penalty as well as to be stopped and forced by an injunction to take out his dam as provided in this bill.

Representative BROWN. Let me ask you, just there, a question which can be answered very briefly.

Mr. FERGUSON. Yes, sir.

Representative BROWN. You understand this law will prevent you from appropriating the waters of any of the tributary streams, do you?

Mr. FERGUSON. Yes, sir; it says so.

Representative BROWN. Just tell us a little about those tributary streams.

Mr. MARRON. Every stream in New Mexico, with the exception of two, is tributary to the Rio Grande.

Representative BROWN. How many are there, and how many miles do they extend? I simply want a brief statement covering that point; I do not want to interrupt you.

Mr. FERGUSON. The width of New Mexico, sir, from north to south, is over 500 miles; and you will understand that it is a mountainous region. We live in what is called the Rocky Mountain Plateau. The city of Albuquerque is situated right on the banks of the Rio Grande, and yet it is nearly 5,000 feet above sea level. In other words, we are on what is called the Rocky Mountain Plateau, and the Rio Grande drains it by running down, you might say, through the middle of that plateau; and there are tributaries at the foot of each of the hundreds

of little mountain ranges which go to make up the great Rocky Mountain Range, with timber alongside of them, making a sort of protection to that water until it gets started.

I can not answer your question exactly, Mr. Brown; but there are, perhaps, a thousand miles of tributaries in the Territory, when you take into consideration the little ones, from 5 to 20 miles long, that arise directly from the melting of the snow, and also from the natural springs which result from the melting of the snow.

Representative STEPHENS. I will ask you if it is a fact, in your opinion, that New Mexico contains four-fifths of the watershed of the Rio Grande River above El Paso?

Mr. FERGUSON. No, sir.

Representative STEPHENS. What proportion does it contain?

Mr. BURKHART. Only 10 to 20 per cent—not more than 20 per cent at the most.

Representative STEPHENS. I am speaking of the watershed.

Mr. BURKHART. So am I.

Mr. FERGUSON. The watershed in Colorado is larger than it is in New Mexico.

Representative STEPHENS. The watershed of the Rio Grande?

Mr. BURKHART. Yes, sir; the Sangre de Cristo Mountains and the Conejos Range. There is where we get our supply of water in the Rio Grande.

Representative BROWN. I am talking about the number of square miles of watershed, not the amount of water.

Mr. FERGUSON. Now as to tributaries; the Pecos River, in one sense, may be said not to be a tributary of the Rio Grande in New Mexico; but the Pecos River flows into the Rio Grande in the State of Texas, and I do not see why the broad terms of this bill would not also apply to it. There has lately been put in the Pecos Valley an irrigation enterprise that has cost over \$3,000,000. It is being enlarged; settlers are coming in. Lands have been sold there for farms. Fruit farms, alfalfa farms, and cattle-raising farms are being established all up and down that valley. We are progressing and growing. And now, by this bill, it is proposed to put a perfect blight upon any further progress in New Mexico.

Representative HITT. Does the watershed of the Pecos extend into Colorado?

Mr. FERGUSON. Practically, I think it does work into Colorado. Does it not?

Mr. BURKHART. Yes.

Mr. FERGUSON. A little; but it goes out on the southern line of New Mexico, between Texas and New Mexico, and then winds up along the eastern line of the Territory, and around to the north.

Representative STEPHENS. I beg to differ with you. It does not come within 50 miles of touching it.

Mr. FERGUSON. The Pecos rises in New Mexico, but near the Colorado line. Now, the main point which I had in mind (because these other gentlemen are much better posted on this subject than I am) and which I want to emphasize, because it will appeal to the sense of justice of every man who considers this bill, is the fact that while, ostensibly, it only prohibits us from taking additional water, yet, as a matter of fact, when it prohibits us from building dams to catch any of the storm water, it prohibits us from supplying the deficiency

created by the aggressions of Colorado, north of us. We can do that if we are permitted to build dams and catch the storm waters, and save them up until the dry season; and that is what we have been doing. This bill prohibits us from supplying that deficiency. Therefore the effect of the bill, by indirection, will be to absolutely destroy our present vested rights—the farms, the ditches, and the water rights which have existed for two hundred years in New Mexico.

That, to my mind, is a point that can not be evaded by the gentleman from Texas. It can not be escaped from and it can not fail to be effective in the mind of every man who sees the awful condition of our Territory. The operation of Colorado's big irrigation enterprises on the north and (if it is enacted) the operation of this bill in prohibiting us from catching the water of the Rio Grande as it passes through the 500 miles of New Mexico, where it has been caught and used for two hundred years, will, taken together, make New Mexico a desert, and destroy every vested right it has.

I thank you, gentlemen.

Representative STEPHENS. Just one moment. The expression "the unlawful appropriation of water" is used here in several different places.

Mr. FERGUSON. Yes; unlawful under the terms of this bill. You have provided a penalty there for appropriating water "unlawfully;" that is, against the terms of the bill. The expression does not refer to an unlawful appropriation under the general law of riparian rights.

Representative STEPHENS. All that we want is an equitable distribution of the water.

STATEMENT OF SUMMERS BURKHART, ESQ.

Mr. BURKHART. With the committee's permission, I would like to add a few words to what has been said by Mr. Ferguson.

In the valley of the Rio Grande proper there are now under cultivation about 91,000 acres of land. In the tributaries of the Rio Grande, in the northern part of the Territory, there are now under cultivation about 45,000 acres. New Mexico was settled much earlier than either Colorado or the country south of the city of Juarez, Mexico. Our Territory was really settled in 1661, the first permanent settlement being made in that year, and grants have been made since that time up to as late as 1848. Above the Colorado line there were no settlements earlier than 1852. In 1848 a grant was made in the Conejos Valley, but up to that time there had been no water appropriated from the river. The amount of land irrigated in the Rio Grande Valley has not increased 50 per cent within the last thirty years. We have now 81,000 acres of land under cultivation.

Representative HITT. Eighty-one thousand acres in the Rio Grande Valley within the boundaries of New Mexico?

Mr. BURKHART. Within the boundaries of New Mexico.

Representative HITT. Not along the entire extent of the Rio Grande?

Mr. BURKHART. No, sir. In Colorado they have nearly three times what we have. Although the first settlement made in Colorado was about 1848, so far as the waters of the Rio Grande are concerned we have been there since 1601. After the Indian rebellion of 1683 grants were made continuously; but just after it leaves Colorado, or just about the Colorado line, the Rio Grande goes into a canyon which extends

about 100 miles into New Mexico, and there is in that canyon no land susceptible of irrigation. The canyon is probably 1,000 feet deep and is very narrow. It terminates at Embudo, just above Santa Fe, and from there to the Mexican border grants have been made, beginning about 1601. But the settlement of the country has been in the upper part of New Mexico prior to the settlement of Colorado or the country south of the city of Juarez, in Mexico.

Senate Doc. No. 229 contains all of the reports of the engineers and others with reference to the distribution of the waters of the Rio Grande, and those reports were made in response to a resolution of the Senate, asking for information with reference to that subject.

By this document it is shown that in the Republic of Mexico and the State of Texas at no time have there been more than 42,000 acres of land under cultivation and irrigation from the waters of the Rio Grande. They have never appropriated water to a greater extent than 42,000 acres. They now ask Congress to permit them to impound waters which will irrigate a million acres of land. They ask us in New Mexico to allow that water to flow by. It is the storm water that we want, because the actual natural flow of the Rio Grande virtually ceases in New Mexico during a part of the year. There is not now any water in the Rio Grande in New Mexico near the city of Albuquerque, north of Socorro. At Socorro the river is perfectly dry. Enough water has gone by in the river this spring to irrigate the whole of New Mexico, and they ask us to allow all of that water to go by, and not impound any of it in order that it may be impounded at this international dam, to irrigate the State of Texas and Mexico. They ask us to allow water to go to waste which would irrigate, in New Mexico, from the seepage alone, 200,000 acres. There is lost, between the northern boundary of New Mexico and this international dam, enough water to irrigate 200,000 acres of land. They ask us to allow that to go by, in order that new lands, which have never appropriated any water, may be opened up in Mexico and Texas.

These facts are stated in this Senate document, No. 229, and these reports have all been made by Government engineers. As I say, Mexico and Texas have never, since the beginning of irrigation along the Rio Grande, irrigated more than 40,000 acres of land; and yet they ask Congress to deprive us in New Mexico of our rights to impound any water, and to pass legislation which will allow them to impound water sufficient to irrigate over a million acres of land.

That is the gist of this bill. Those people want to speculate in the water down there, and they are getting Congress to help them out. On the question as to whether or not we shall appropriate any more water, the bill says that we may use the amount of water that we have heretofore been using. It will lead to endless litigation and prosecutions, involving the question of how much water we have heretofore taken. It will absolutely ruin us in every way if this legislation goes through. We will be in the courts all the time to defend the rights which we have acquired by an ownership of two hundred years, and to show how much water our grandfathers took, how much we took, and how much we are taking now. In every phase of it this bill is exceedingly unjust to us in New Mexico.

Representative DINSMORE. May I ask you a question?

Mr. BURKHART. Yes, sir.

Representative DINSMORE. I would like to know if, annually, there

is such a rise in the Rio Grande as fills the bed of the river down as far as Texas, notwithstanding the impounding of water above?

Mr. BURKHART. Yes. We really have not any dams in New Mexico to amount to anything.

Representative DINSMORE. I mean do they have, every year, without reference to that, a river full of water down on the Texan and Mexican border?

Mr. BURKHART. I think the report shows that there is always, in the spring, a flood of water at the place proposed for the international dam. We have not any objection to their building their international dam for catching the storm waters, if they will allow us the same privilege up in New Mexico, and there will be plenty of water for everybody.

Representative STEPHENS. Suppose you build the Elephant Buttes Dam in New Mexico, and impound the storm water in your territory, 150 miles above El Paso, there being probably, as you said, 80,000 acres of land between El Paso and the Elephant Buttes Dam, how will El Paso get any water whatever?

Mr. FERGUSON. The storm water will fill both dams.

Representative STEPHENS. But I beg to call your attention to this point, and I ask the committee's attention to it: If they take up the report in this Senate document they will see that will not be the case. If the Elephant Buttes Dam is constructed, one year out of five that will not be more than enough water to fill that dam, and not a drop of the storm water will reach Texas.

Mr. MARRON. I would like to ask Mr. Stephens why Congress should be called upon to legislate in behalf of the citizens of the Republic of Mexico to the detriment of the citizens of the United States? If they had prior rights in the waters of the Rio Grande above or below the Elephant Buttes Dam they have ways in the courts to protect those rights.

Representative STEPHENS. Mexico and Texas have just the same right to the water that flows down the Rio Grande as has New Mexico, and all that we ask is an equitable distribution of that water.

Mr. FERGUSON. As we say, we do not object to the building of this dam at El Paso. We do not object to the building of the Elephant-Buttes dam. We want all the dams and reservoirs that we possibly can get in New Mexico, in Colorado, and in different places; and we say that there is water enough in the Rio Grande to supply all of them. But what we object to is that Congress should be called upon to say to the citizens of New Mexico, "You will not be permitted to take out one drop of water more than you have already taken out," which means that we are to stand right where we are standing now—that New Mexico will not be permitted, if this act is to become a law, to advance one step farther in its onward march to progress. We can not develop any more of our land; we can not develop our mines; we can not increase our herds; we can not do anything to materially increase the wealth of New Mexico if this bill is enacted into a law.

Representative STEPHENS. This bill proposes to give you your distributive or pro rata share of all the water that flows down that river, both storm water and seepage.

Mr. FERGUSON. How do you propose to do that, Mr. Stephens?

Representative STEPHENS. By Government supervision.

Mr. FERGUSON. That is just the point. If this bill is enacted into a

law, we will have hundreds of detectives out there, and every citizen of New Mexico will be obliged to go into court to defend his rights and defend himself against invasions.

Mr. BURKHART. But why is not Colorado included in that provision? These reports to which we have referred show that Colorado has now appropriated nearly three times as much water as the whole of New Mexico has appropriated, and is still doing so; and yet Colorado, under the provisions of this bill, is to be allowed to keep on appropriating water that really belongs to us.

Representative STEPHENS. You are complaining of Colorado for appropriating any of the water that comes down the Rio Grande, are you?

Mr. BURKHART. No, sir; we are not complaining of it. We say it is all right; that Colorado can do it, and we can protect ourselves by impounding our share of the water. But you say that Colorado may go on and take more and more of our water. We have no means of protecting ourselves against Colorado; and yet this bill says that we shall not appropriate any more water than we do at present, while it allows Colorado to go on increasing its appropriating water, taking it out at your own dam there. You do not have any provision aimed against Colorado; it is only against New Mexico that this bill is directed.

Mr. MARRON. We desire to call the attention of the committee to the further fact, if the gentlemen please, that there was a syndicate formed in El Paso (this is a matter of public notoriety) for the building and construction of this international dam and for the purpose of speculating in the lands of northeastern Texas.

Representative STEPHENS. I desire to call your attention to the fact that that is not true and is a statement which can not be sustained at all.

Mr. MARRON. The United States brought a suit for injunction against the Elephant Buttes people, who are building a dam in the southern part of New Mexico, for the purpose, as we have been informed, of aiding the building of this international dam. Now, as Mr. Burkhardt said, if this dam is built and we are prohibited from taking the waters of the Rio Grande, something like 2,000,000 acres could be irrigated where only 41,000 acres are irrigated now.

Mr. BURKHART. No; there are not even that many irrigated now. There never have been more than 41,000 acres irrigated, and that amount has been decreased by the appropriation of water in Colorado. We do not think any appropriation of water in New Mexico has materially lessened the flow of water in the river. The extent of the irrigated lands in New Mexico does not exceed at this time 30,000 acres and has never been greater than 41,000, and the people who are proposing this bill now want to provide for an "equitable distribution" of the waters of the Rio Grande and get water enough to irrigate a million acres of land which has never been irrigated heretofore.

Representative STEPHENS. You have made the charge that there is a syndicate at El Paso. Will you please state the name of the corporation or syndicate or the name of one man who is connected with it?

Mr. BURKHART. I will refer Mr. Stephens to this Senate document. This whole agitation commenced in a protest from the citizens of the city of Juarez, Mexico.

Representative STEPHENS. That is right.

Mr. BURKHART. Claiming that they had been deprived of water.

Representative STEPHENS. That is right.

Mr. BURKHART. By easy transition it got over, after Colonel Mills, of the Army, was sent down to investigate the matter, from the Interior Department into the War Department; and the War Department had a suit instituted, through the proper channels, to prevent the building of the Elephant Buttes Dam, because it impaired the navigability of the Rio Grande. That is the way that litigation first commenced, but it all originated in a petition from the citizens of Juarez, through Mr. Romero, the Mexican minister, claiming that their lands were being devastated by the appropriation of water in New Mexico; and through different stages the War Department was finally induced to ask the Department of Justice to bring a suit to restrain the building of the dam at Elephant Buttes, on the ground that it impaired the navigability of the Rio Grande.

Representative HITT. Do boats run on the Rio Grande?

Mr. BURKHART. No, sir; not farther north than Brownsville, Tex.

Mr. FERGUSON. The Supreme Court has decided the case in our favor.

Mr. BURKHART. The Supreme Court of the United States, in the case of this Elephant Buttes Dam, which went to that court, sent it back to the lower court. Our own courts decided that the Rio Grande was not navigable, and that the water appropriated in New Mexico and Colorado did not in any way affect the navigability of the river. They made that finding of facts on the evidence before them. The Supreme Court sent the case back for further evidence, and it is now pending in our supreme court. It was decided by the lower court in favor of the Elephant Buttes Dam people.

Mr. MARRON. I think the supreme court has decided it.

Mr. BURKHART. The supreme court of our Territory has already decided it?

Mr. MARRON. Yes; and has sustained the lower court.

Mr. BURKHART. I did not know that. But now, finding they can not have us deprived of this water through the courts, they are coming to Congress to get a bill passed.

Representatives STEPHENS. You say the supreme court has affirmed the decision of the lower court?

Mr. MARRON. That is my information.

Mr. FERGUSON. The Supreme Court of the United States decided this, if the committee will pardon me again for a moment. It decided all the questions in the case against the contention of the Government, except that it held that not enough facts were before it to enable it to decide whether the river was navigable or not. The court sent the case back for the purpose of having additional proof taken on that subject. That additional proof was taken. That branch of the matter was heard by the district court and again decided against the Government, appealed by the Government to the supreme court of the Territory, and a few weeks ago was argued and submitted, the question being as to whether the additional proof taken established the fact that the Rio Grande was navigable, or that the taking out of the water in New Mexico impaired the navigability of the river down at Brownsville, Tex., near the Gulf of Mexico. There never was a claim that it was navigable inside of New Mexico. It is not navigable for ducks during half the year, and it is a torrent when it does go. The fall is very rapid, and the idea of navigability up there is ridiculous; but the claim was made that so much water was taken out in Colorado and

New Mexico that it interfered with the navigability of the river down near the Gulf, near Brownsville, Tex. And that was the point under investigation.

Now, I had not heard what some of the gentlemen have just stated, that our supreme court has again decided that the navigability of the river down at Brownsville, Tex., was not in any way interfered with by the taking out of water for irrigation purposes in New Mexico and Colorado. The case will probably come back to the Supreme Court of the United States, although on all legal questions the Supreme Court sustained the contention of the Elephant Buttes Dam people, and decided against the Government upon all the legal questions regarding the irrigation, the only point being as to whether or not navigation below was impaired. That is what gave the jurisdiction to the War Department, and caused the bringing of the suit. So that that litigation has practically ended, and has practically been decided.

Representative STEPHENS. Before you sit down, let me say this: One of your number has made a charge against El Paso to the effect that there was a syndicate organized there for the purpose of building this dam and speculating in the lands adjacent to it, and for the purpose of buying up this water. Now, is it not a fact that you can not point out any corporation or any combination of citizens formed for any such purpose? And is it not a fact that the Mexican Government has brought this thing about, to a great extent, by filing claims here, as shown by this Senate document?

Mr. FERGUSON. They have filed claims that aggregated, I understand, when I was here in 1897, about \$15,000,000 for alleged damages to their agricultural interests. As Mr. Burkhart has shown to you, only about 41,000 acres have been utilized at any time for irrigation purposes. These damages are unliquidated. They are simply ex parte statements, filed for a purpose; and I am told now that since this agitation and this litigation have begun the amount of these claims has been doubled by some influence at work at El Paso. It is a matter of common notoriety (I did not propose to bring it up here, but I will refer the committee to the testimony on file in the Supreme Court of the United States, taken in their hearings, in which the charge was made and attempted to be proved) that Col. Anson Mills's brother, in El Paso, is at the head of a syndicate which has bought up the lands for a hundred miles south of El Paso, on both the Mexican and Texan sides.

Representative STEPHENS. Do you know him? I know him well. He is a counselor at Juarez, and is not worth \$500.

Mr. FERGUSON. I do not know him. But coming back to the point, gentlemen, you are attacking the very life and civilization of New Mexico. That is what you are doing. And we have heard (it is a matter of common repute in our country, gentlemen) that there is a syndicate down there which has acquired these 41,000 acres, the utmost that was ever irrigated before this agitation began, while we have, for two hundred years, irrigated thousands and thousands of acres in New Mexico, and the very significant statement is made that those claims filed by the Government now amount to between twenty and thirty million dollars.

Representative HITT. By the Mexican Government?

Mr. FERGUSON. Yes, sir; by the Mexican Government—purely

unliquidated ex parte statements, and statements which have evidently been procured by somebody to have been filed, in the past few years, since this agitation began, in greatly increased amounts.

Representative STEPHENS. Do you claim that the people below El Paso are not damaged by losing the water to the same extent that you are damaged? You claim damage in New Mexico. Why are not Texas and Old Mexico damaged to the same extent, in the same way?

Mr. FERGUSON. We claim that the people on both sides of the river below El Paso, so far as they had vested rights by prior appropriation of the water, are just as safe as we are, and that you are proposing now by this bill not to protect the people on both sides. I will give you credit for wanting to protect Texas, and not working for Mexico here against the people of New Mexico, who are American citizens, or ought to be. We will confine it to Texas. Your bill does not propose additional legislation to protect you in the rights in which the common law will always protect you for the appropriation of water for farms and land actually under cultivation; but you are proposing to enact legislation here which will make it a crime for us to take out water north of El Paso, and you are asking legislation at the hands of Congress that will enable you not simply to protect yourselves in the irrigation of your 40,000 acres of land, but to reclaim a million acres of land below. That is what we complain of.

Representative STEPHENS. You made the charge that there was a syndicate formed there and gave us the name of Mr. W. W. Mills?

Mr. FERGUSON. I gave you the name of a gentleman whom I have heard frequently mentioned, and whose name figures in that testimony.

Representative STEPHENS. And that is the only evidence you produce of that fact, is it?

Mr. FERGUSON. There is sworn testimony, brought in by the people who are fighting the Elephant Buttes Dam case against the Government of the United States, bearing upon that question. That is the origin of that statement. We did not propose to bring that matter up here, or base our protests on it.

Representative STEPHENS. Now, I will ask you, on your part, whether there is not a syndicate known as the Elephant Buttes Dam Syndicate, which proposes to build a dam in New Mexico 150 miles above El Paso, on the Rio Grande River, which is backed by British capitalists, and if it is not true that you gentlemen are seeking to have that dam built at a cost of two or three millions of dollars, so as not only to use the water of the Rio Grande for the purpose of irrigating the land that is now under irrigation, but for the purpose of greatly extending it, to the extent of 100,000 acres?

Mr. FERGUSON. Are you through with your question?

Representative STEPHENS. And if your syndicate builds that dam, will it not deprive El Paso of any water whatever?

Mr. FERGUSON. There is a company that sought to build a dam at Elephant Buttes, and British capital came in and took the stock of that company. We invite capital to help us to develop mines or anything else in New Mexico. We welcome it and treat it fairly when it comes. They undertook to build a dam, and that dam has been the subject of litigation in the case which we have recently outlined to you. The object of that company, as shown by its articles of incorporation, is to impound the storm waters that come down when the snow melts and the big

rains fall in the summer, and, if possible, to enable us to progress in Mexico and reclaim more land if we can.

Representative STEPHENS. How much more?

Mr. FERGUSON. But it is expressly disclaimed—it is disclaimed in the bill, disclaimed in the answer, and it is disclaimed in all the testimony—that our object is to take one drop of water that belongs by prior appropriation to the people south of El Paso or to interfere with their impounding all the storm water they please and progressing and reclaiming more land there. That is the object of that company, and if the gentleman thinks he can prejudice a committee like this by referring to it as being backed by British capital, I can retort and tell him that he proposes, in behalf of this alleged syndicate, which is speculating in the lands south of El Paso, to have the Government spend nearly \$3,000,000, which this bill here shows he asks for.

Representative BURLISON. Is this W. W. Mills the gentleman who is said to be the financial backbone of this syndicate?

Mr. FERGUSON. I do not know whether his name is W. W. Mills or not. I am not connected as an attorney with the Elephant Buttes Dam. The only connection on earth which I had with the matter was to file a protest, as a Delegate representing the people of New Mexico, against the proposed treaty, and I had the satisfaction of having Mr. Day, after he heard me much more at length than you gentlemen have heard me here, tell me that such a treaty would not probably be passed and that I could go on home and he would let me know if I was needed further. It is to force the State Department to consummate this treaty that this bill is introduced, and the Government is asked, on the basis of these alleged damages, to appropriate two or three million dollars here to build a dam, in connection with legislation that will destroy New Mexico and destroy her material interests. If they want to catch the storm waters at El Paso, we have not the slightest objection. They will not let us catch the storm waters at Elephant Buttes—we do not know why—but the taking out of water—

Representative DINSMORE. You mean they propose to prevent it?

Mr. FERGUSON. Yes, sir; they propose to prevent it by this bill, which we are fighting and against which we are protesting.

Representative STEPHENS. Will you please answer that question?

Mr. FERGUSON. Yes, sir.

Representative STEPHENS. If you have examined this Senate document, it is apparent from the report of the Government engineers who have been at work upon this matter for several years—

Mr. FERGUSON. General Mills is the chief engineer, is he not?

Representative STEPHENS. Certainly; you are stating that everybody connected with this matter is trying to defraud your country. You do not admit that any man is honest, except probably some of the men you bring here with you. Now, is it not a fact, as the Government engineers have stated, that if you impound that water in the Elephant Buttes Dam, according to its proposed size and dimensions, there will not be any water for the international dam?

Mr. FERGUSON. No, sir; we do not admit any such thing.

Mr. BURKHART. If we appropriate more water by the Elephant Buttes Dam than belongs to us, you certainly have your remedy in the

courts just the same as other people. If we are appropriating more water by the Elephant Buttes Dam than we are entitled to, the people of El Paso can go into our courts and prevent it. You can require us to allow water enough to pass that dam to irrigate your land.

Representative STEPHENS. Now, just take this case, for example: Suppose John Smith has 10 acres of land below El Paso and he is damaged to the extent of a hundred dollars by somebody in New Mexico; in what court will he bring his suit?

Mr. FERGUSON. The Elephant Buttes Dam, which you say is a syndicate backed by English capital, does not propose to take any water but storm water. That is shown expressly by all the testimony, to which I will not refer, because I am positive about it. While I was not an attorney in the matter, I was here as a Delegate, in 1897, when this whole matter had its origin. Mr. Romera, a very able representative of the Mexican Government, was minister here at that time, and he submitted a draft of this treaty, and I was allowed access to it and filed a protest against it. The Elephant Buttes Dam people have never proposed to do anything more than impound the storm waters, and they are expressly compelled, by the very terms of their charter, to let all the natural flow of the water go down as it did before.

Mr. BURKHART. And there is another thing I want to state to the committee, so that it may understand our position. Not one of us is connected in the remotest degree with that Elephant Buttes Dam. We do not know anything about it. We live 200 miles above it. We are not interested in it. It is the general question that concerns us. The people of Albuquerque are now spending about \$100,000, which was raised by public subscription, in building an irrigating system. We have not any dams at the present time except a very small dam which is in course of construction. This bill "knocks us out" completely. We have given our money; every citizen has subscribed to that enterprise, and every person in that town is interested in it, and the system is being built for the development of the country. It will irrigate 25,000 acres of land, and yet this bill absolutely kills it.

Mr. FERGUSON. It proposes to do that after about \$60,000 of the money has already been spent, although the object is not to do anything except to catch the storm waters.

Representative BROWN. If you could, in a word, definitely state where you draw the line between the storm waters and the natural flow of the river, it will help me. Perhaps everybody else knows about that, but I do not. I am not clear about it.

Mr. FERGUSON. What we mean by the natural flow is the amount of water which is ordinarily kept in the river by the gradual and slow melting of the snow. What we mean by storm water is the water that comes down when the snow is made suddenly to melt in the Rocky Mountains, where it falls in great quantities during the winter—when it is made, by a sudden hot spell, to melt and come down all at once. I have seen half the people of the town of Albuquerque up at a little bend, half a mile or so above the town, piling up sand banks to head off this great flow because of a sudden thaw in the mountains.

That is what we call storm water, in a general sort of way. Then another thing. We have a very heavy rainy season in New Mexico in

the months of July, August, and September, chiefly in the month of August. We have regular tropic rains there sometimes, which will, now and then, make a waterspout.

Representative BROWN. What you say you want are your storm waters?

Mr. FERGUSON. What we want to catch, so as to supply the deficiency when the very dry season comes, are these storm waters.

Mr. BURKHART. And the flood water from the mountains when the snow melts—that is what we want.

Representative HITT. Is there any legal definition of storm water—any way of determining that question in an engineering way?

Mr. FERGUSON. I have given you the general sense of the expression. I know that is what it means among us, but I am not able to give you its legal definition.

Representative HITT. If this bill will lead to litigation, I can see the importance of having a definition of that term.

Mr. FERGUSON. Yes; I see the importance of Mr. Brown's question, and I am sorry I can not answer it more definitely and specifically from a legal standpoint. But I know that I have given the correct general answer.

Representative STEPHENS. Let me ask this question, which I think will enlighten all of us: Would not the same dam that impounds the storm water also impound the seepage of the natural flow?

Mr. FERGUSON. Not by any means, because there the law of prior appropriation comes in. That is all there is about it.

Representative BURLESON. Does the Elephant Buttes Dam cross the Rio Grande?

Mr. FERGUSON. Yes, sir.

Representative BURLESON. It crosses the entire river? It is a complete dam?

Mr. FERGUSON. Yes, sir.

Representative BURLESON. Does not that stop the natural flow of the water?

Mr. FERGUSON. It does in one sense, a technical sense; but they are constructing it with a view to letting the water run over. There is a certain quantity of water that passes the location of the Elephant Buttes Dam, which has been appropriated in good faith prior to this time by men who have used it for their farms. Now, by the very charter of the Elephant Buttes Company they bind themselves to allow that much water to pass. They have got flood gates; they have got big gates down at the bottom of the dam, which they are compelled to have to keep it clean, because these immense storms will wash sand and bowlders and logs and débris of every kind down there, and soon fill any dam up to the level. To obviate that they have got a scientific system of building a dam for a country like that, which is liable to great floods—a system of flood gates and contrivances by which this débris can be washed out. You may say it will lead to friction. So anything will lead to friction. Whenever there is a question of this kind one person will make a little aggression, and you can not obviate the possibility of anything like that. But all that we can do is what the Elephant Buttes people have done. It is provided in their charter that they shall not prevent the water that has heretofore gone down from going, and in all their testimony any intention whatever to do so

is disclaimed. If you do anything else you simply come back to the original proposition, which will make New Mexico a desert, and prohibit us from building any dams in the bed of that stream. We can not build a dam and catch the storm waters anywhere but in the natural bed of the stream. The great flow of water from the mountain sides goes nowhere but to the proper place for it, which is in the bed of the stream. Now, the only point about the navigability, the big bone of contention in that suit, was just there. It is now conceded on all sides that there was never any navigation inside of New Mexico, or for several hundred miles south of El Paso.

Mr. BURKHART. A thousand miles south of El Paso.

Mr. FERGUSON. There was never any pretense of that, so that there is no objection to our catching that water on the ground of navigability. Now, the gentleman's question implies that by building across the bed we will catch the natural flow and the storm water, too. Grant it; but we are compelled to let it go again. Our charter provides for that.

Representative HITT. Let me ask you, in that connection, if it is not true that no dam can be so constructed as to preserve and retain all the storm water? I suppose in successive floods it goes over?

Mr. FERGUSON. Precisely. In great floods it goes over the top of it.

Representative HITT. You only retain a part of it?

Mr. FERGUSON. That is why we got English capital. That is why these gentlemen want you to spend so much money—two or three million dollars—to build their dam. It has got to be built of rock, stone, cement, strongly built to stand a great flood of water, and over the top it runs.

Representative HITT. Exactly.

Representative STEPHENS. I think the answer to this question, Mr. Ferguson, would be interesting: You catch all the storm waters in that dam until it gets full; but you have a reservoir, have you not?

Mr. FERGUSON. At Elephant Buttes; yes.

Representative STEPHENS. Then if you fill that, and if we had another reservoir down at El Paso—

Mr. FERGUSON. It would fill that, too—that is just our point. You need not be talking about distributing it, because your dam will be there. Why do you not stop asking the Government to build it for you, and build it, as we are doing at Elephant Buttes, with outside capital?

Representative STEPHENS. Let me ask you another question right there: Then about May this flood comes down there, does it?

Mr. FERGUSON. The melting of the snow is generally in May—sometimes earlier, if the season is earlier, and sometimes later, if the season is later.

Representative STEPHENS. Suppose we get both the Elephant Buttes Dam and the international dam full. Then there is dry weather, is there not, for some months?

Mr. FERGUSON. Yes; sometimes.

Representative STEPHENS. Then the supply of storm water in your reservoir is steadily going down? You are using it for irrigation purposes, and it is steadily going down?

Mr. FERGUSON. Yes.

Representative STEPHENS. Then from the time you lose the water from your Elephant Buttes Dam in irrigating your part of New Mexico,

as soon as any water leaves that dam and the seepage comes in from above, the regular flow, are you not appropriating all of that water, and does not the El Paso Dam get none of it?

Mr. FERGUSON. No; we will open the flood gates and let all you had before go down.

Representative STEPHENS. That is what we want you to do. That is what this bill is for, to equitably distribute that water.

Mr. FERGUSON. No; it is not. The bill makes it a criminal offense for us to build a dam, or catch any water.

Representative BURLESON. Then, if that provision were stricken out, you would have no objection to the bill?

Mr. FERGUSON. We have no objection to their building all the dams they please in the Rio Grande Valley. It is the life of the people and the—

Representative BURLESON. You have no objection to the provisions of this bill, then, which require an equitable distribution of the water?

Mr. FERGUSON. We do not know about that. We want to have something to say about what the equity is. Who determines the equity? All we can say in answer to that is that all of this testimony disclaims any intention on the part of the Elephant Buttes Dam people to stop one drop of water that anybody had prior to the building of the dam, and that is one of the conditions of their charter.

Mr. BURKHART. Whether they do it or not, the courts are there to protect the people who have been appropriating that water. But we do not want a committee of Congress to say what is equitable. We are perfectly willing for the courts to say, as they do now, what is an equitable division of that water; and if those people have rights, they can go into court and protect those rights, just as we do down in New Mexico. When more water is taken by one person than he is entitled to, and some one else is deprived of it, the person who takes the water is sued; and the court determines how much water he was entitled to, and how much has been appropriated. Now, I can not see why the people of El Paso stand on a different footing from the people of New Mexico and why they can not go into court and assert their rights.

Mr. FERGUSON. If there could be a general system applied to this matter it would solve many of these problems, and it has got to come at some time in the future. Take as an example the agitation which is now going on in the State of Kansas about the Arkansas River. You will see from the dispatches in the papers that the Attorney-General has been trying to start a suit about that matter. If there could be a general system devised by Congress applying to Colorado, as well as to New Mexico—why does not the gentleman tell us why he leaves Colorado out of this bill?

Representative HITT. Will you look at the wording of this first section? It does not contain a specific enactment of law, but says that nothing in the acts recited "shall be so construed as to authorize the appropriation and storage of the waters of the Rio Grande or its tributaries in the Territory of New Mexico to which others have right by prior appropriation." The "others" who are meant are the Mexicans and Texans, as I understand?

Mr. FERGUSON. Yes, sir.

Representative HITT. Now, there seems to be a difference between you gentlemen in this respect. You say that you do not propose to

appropriate, under any circumstances, waters which, by prior appropriation, should go to Texans or Mexicans?

Mr. FERGUSON. Yes, sir.

Representative HITT. And yet you contend that this bill prohibits you from constructing dams which will take up water beyond what is required by Texans and Mexicans, through prior appropriation?

Mr. FERGUSON. Yes, sir.

Representative HITT. Now, that is not very clear.

Mr. FERGUSON. Yes; I understand that. The bill itself is very obscure. I will just read a little further, if the gentlemen please:

The unlawful appropriating and storing of water, in this act mentioned, may be prevented, and the dam, reservoir, or other means used for impounding the water may be removed by the injunction of any circuit court exercising jurisdiction in any district in which said water may be appropriated or stored, and proper proceedings in equity to this end may be instituted under the direction of the Attorney-General of the United States.

Representative HITT. But this dam which has been erected will obstruct the water due to Texans and Mexicans before any such thing can be done; and you say the dam will be so scientifically constructed that it will allow this water which, by prescription and ancient right should have gone to Texans and Mexicans, to pass. I do not see how it will give them the least opportunity to worry you.

Mr. FERGUSON. The general purpose of the bill is to prohibit us from constructing any dam. That is the whole object of it.

Representative HITT. Show me the language, Mr. Ferguson.

Mr. FERGUSON. It is contained in this proposed treaty which they are ordered to make. This "whereas" recites the treaty.

Representative BURLESON. Oh, that is not the enacting of the law.

Mr. FERGUSON. Yes, sir; it directs the Secretary of State to consummate the treaty.

Representative HITT. That is in the second section: "That the Secretary of State is hereby authorized to proceed with the consummation of the proposed treaty," etc.

Mr. FERGUSON. Yes, sir.

Representative HITT. And then it provides for this large appropriation to settle the Mexican claims.

Representative STEPHENS. That is a condition precedent to making this appropriation. We do not want them to have an outstanding claim against the United States Government if we appropriate this money and build that dam ourselves.

Mr. BURKHART. Here is the provision. It is article 6 of the proposed treaty (p. 181, Senate Doc. No. 229):

To prevent new appropriations of water which might still more diminish the volume of the Rio Bravo del Norte hereafter, and thereby prevent the passage of the water necessary to fill the dam to which this convention refers, the Government of the United States of America binds itself to issue the necessary regulations, and to apply, if necessary, to the Congress of the United States of America for legislation to prevent the construction of new works or canals on the Rio Bravo del Norte and its tributaries on that part passing through the territory of the United States of America; or, if they are constructed, to prevent the volume of water being diminished to such an extent that it will not supply the dam, and to institute prompt and efficacious legal proceedings to prevent the violation of the provisions of this convention.

This convention provides that the dam shall always be kept full of water.

Representative HITT. But the language of that treaty does not seem to be restrictive, as is the language of this bill, at all.

Mr. FERGUSON. No, sir; that is the point.

Representative HITT. And that is the treaty which, it seems to me, would affect very seriously the waters that ordinarily flow.

Mr. FERGUSON. That is what we all feel in New Mexico, if it please the Chairman.

Representative HITT. But Mr. Stephens has not been answered, yet, on the point he makes about the language of this bill, to which I have just called attention.

Representative STEPHENS. That is true.

Mr. FERGUSON. He proposes to direct the State Department to go ahead and consummate the treaty, the terms of which we have read.

Representative BURLESON. The treaty proposes to prohibit the construction of these dams, provided they obstruct this water which has been appropriated theretofore.

Mr. BURKHART. Oh, no. It says: "To prevent new appropriations of water which might still more diminish the volume of the Rio Bravo del Norte."

Representative STEPHENS. I will suggest that the second section could be amended so as to conform with the first section, so that a treaty of that kind could be entered into.

Representative HITT. The second section refers back and says that "the proposed treaty" (meaning the one that is already written out, and is therefore a determined thing) shall be consummated.

Mr. FERGUSON. Yes, sir; that is it exactly.

Representative STEPHENS. We would have no objection to entering into one which would be in accord with the first section of this bill. Let the bill be amended to that effect.

Mr. BURKHART. If the object of the legislation is to provide that we may not appropriate hereafter water which has been heretofore appropriated in Texas, we have no special objection to that, of course. But the object of the bill is—

Representative HITT. Would not that be in accordance with the spirit of law governing irrigation, as everywhere recognized?

Mr. BURKHART. We can not take any water out of the river, either now or at any future time, which belongs to somebody else. The courts are there to protect the rights of everyone in that respect without the passage of this bill. But the object of this bill and the treaty, taken together, is to keep that dam full all the time, to appropriate the storm water—to fill that dam with a million or two million acre-feet of water and prevent us from using any of that water at all in the future; and then there would be continual trouble between the people of the two Territories, with reference to the amount of water heretofore appropriated. They want, not to let the water go down and be appropriated as it is used by the people, but to appropriate it at this time. They want to appropriate all of the surplus water of the Rio Grande, so that hereafter the people below our Territory will have the first right to use the water for agricultural purposes, while we in New Mexico will have to allow it to pass us and go by. They are going to impound it now, and sell their lands thereafter, and we are not to be allowed to touch that water at all. Hence we are limited, by this bill and by this treaty, to the water that we have now appropriated, and we must let that dam get full in order that water may hereafter be sold

to people who have not appropriated any of it. In other words, by the building of this dam they are going to appropriate all the water in the river—

Representative BROWN. Would you have any objection to the bill with section 2 stricken out?

Mr. BURKHART. I think the courts would protect the Texans just as well as this act of Congress. We can not, now, without the passage of this bill, take any water that belongs to them.

Representative BROWN. My question is whether this change would remove your special objection?

Representative STEPHENS. If you strike out the second clause, you strike out the enacting clause.

Representative DINSMORE. That is not responsive to the question. Would the bill be objectionable to you if the second section, which refers to and practically enacts the treaty, were stricken out?

Mr. FERGUSON. We have not the slightest objection, sir, to their building a dam at El Paso; no.

Representative BURLESON. That is not the question. The question Mr. Dinsmore asked is whether you have any objection to the first section of this bill?

Representative HITT. Without the second?

Representative BURLESON. Without reference to the second?

Mr. FERGUSON. The first section recites the treaty, leaving the whereases out—

Mr. BURKHART. If the bill will state that the building of the international dam at El Paso, Tex., shall not be construed to mean an appropriation of water, we will have no objection to it.

Representative BURLESON. The first section does not relate to the dam at all.

Representative DINSMORE. It says: "That nothing in the acts of March 3, 1891," etc., "shall be so construed as to authorize the appropriation and storage of the waters of the Rio Grande or its tributaries in the Territory of New Mexico to which others have right by prior appropriation."

Mr. FERGUSON. There is a technical objection to that in this respect, that it would not be identically the same water, and if we built a dam we could not say that identically the same water would go down.

Representative DINSMORE (reading): "And every person and every corporation which shall be guilty of thus unlawfully appropriating and storing said waters in the act mentioned shall be deemed guilty of a misdemeanor." The only thing which this bill does, apparently, is to change the penalty for the violation of the law.

Mr. BURKHART. I should say that this law reenacts the former law—that that has always been the law. We can not take what belongs to anybody else. We do not pretend to do so.

Mr. FERGUSON. The objection to the bill would be, then, that we could not stop the waters at all. We could not say that the dam which we built would not obstruct the flow at all, and that the very identical water would flow past it; and thus the bill would practically have the effect of prohibiting us from building a dam, because the dam would obstruct the flow of some water that had theretofore been appropriated. All that ought to be required of us is that while taking out water we shall be sure to allow enough water for them to go down, and we have no objection to that.

Representative HITT. It is not the obstruction of the flow, but the obstruction of the supply which the bill is intended to reach evidently.

Mr. FERGUSON. That would be better. We have not the slightest idea of doing that.

Representative HITT. The second section also relates to a subject which does not seem to concern you—that is the settlement of a large claim between the Government of Mexico and citizens of the United States. I presume that is not at all relevant so far as the things you are looking after is concerned?

Mr. FERGUSON. No; if the Government wants to pay the millions they claim we have not the slightest objection if they are paid in some way which does not interfere with us. That is what has brought us here and has wrought the people up as I have never seen them wrought up in the past.

Mr. BURKHART. If we build that dam they will claim that we have appropriated all the water. Our contention is that they do not appropriate water until they apply it to some beneficial use. If Congress should enact a law which authorized the building of a dam at El Paso to catch all the water which is not now appropriated, it would be held to mean an appropriation, by act of Congress, of all the waters in the river; and that is the part of it to which we object. We do not object to the Mexican people getting all they are entitled to of the water in the river, but we do object to Congress building an international dam and saying, in effect, that this is an appropriation of all the water, or enough water to fill this dam. We object to Congress saying, "You shall not take any water until that dam is filled, because by building it we have appropriated that water;" whereas, under the general rule of appropriation, water is not appropriated until it is applied to some beneficial use. And the construction given to this act would be that Congress, by passing this act and building that dam and placing restrictions upon the use of water in New Mexico, had said that that water was appropriated at the time of the building of the dam, and that all the water necessary to fill it had been appropriated, and that we had not any right to take any water out of that river until that dam was full.

Representative DINSMORE. I would like to ask Mr. Stephens whether there is a good flow of water at all times at Juarez?

Representative STEPHENS. Oh, no; for the last eight or ten years, I believe, during the months of June, July, and August, we have had very little water in the river; and the destruction of crops there has been universal. Men who were small farmers have left that valley by hundreds, their lands have been rendered almost worthless.

Representative DINSMORE. Is the flow ever entirely suspended?

Representative STEPHENS. It is entirely suspended for months at a time, during the summer months.

Mr. BURKHART. It is so in New Mexico, too.

The CHAIRMAN. What is the proportion of farmers who have left that valley?

Representative STEPHENS. Three-fourths of the farmers have made that objection already.

Mr. BURKHART. We have plenty of water for irrigation up to the 25th of June in Albuquerque. After that time, in some years, we have a little water, and some years we have not any. At Albuquerque, which is at about the center of the Territory, or 20 miles below, they

had last year, from the 25th day of June until December, no water in the river, and the river was entirely dry beyond El Paso.

Representative BURLESON. I will ask Mr. Burkhart to revert to Mr. Hitt's question. You have no objection to the provisions of the first section of this bill?

Mr. BURKHART. No, sir; none whatever; because my idea is that it reenacts the law as it stands now, and that Congress has not changed it in any way.

Representative BURLESON. Then the bone of contention about the bill is the provisions of the proposed treaty?

Mr. BURKHART. Yes; and the construction, unless it is clearly understood otherwise, that would be given this act if this dam is built under international auspices, the construction would certainly be given to the act that that water was appropriated at the date of the building of that dam. Now we claim that no water can be appropriated under the law as it stands until it is applied to some beneficial use, and that they can not by impounding that water and keeping it there continuously appropriate it; but the people on the Mexican and Texan sides of the river at some time in the future will claim that that is an appropriation of the water at this time, and yet it would be so contended and held.

Representative DINSMORE. Is not that a question for the courts to determine; Mr. Burkhart?

Representative BURLESON. No act of Congress would disturb a vested right of yours.

Mr. BURKHART. Certainly not; we know that. The first section only reenacts the present law.

Representative BURLESON. Then that eliminates that objection.

Representative DINSMORE. Does the proposed legislation place such a construction—

Mr. BURKHART. You see if section 2 is stricken out the treaty is eliminated; and if you simply say that we shall not appropriate unlawfully water that belongs to somebody else, you are simply reenacting the present law. We do not object to that; certainly not.

Mr. FERGUSON. Allow me to make this suggestion in that respect: If we build any dam north of El Paso, would it not be contended that we were obstructing the flow of the water that went down to the dam? We could not let identically the same water go down. We want it distinctly understood that if they build a dam at El Paso to catch the storm waters, to which we have no sort of objection, we shall have the same privilege above, provided only that we allow the quantity of water heretofore appropriated to go down. That is all.

Representative BURLESON. No decision of any court construing riparian rights ever held that an act of Congress could destroy vested rights.

Mr. FERGUSON. But Congress is a very high body, and its action is very portentous; and we are afraid to have Congress intervene unless by the words of the act our interests are very carefully guarded.

Representative BURLESON. But Congress can not destroy any vested rights.

Mr. FERGUSON. That is true; but Congress can enact such legislation (as I pointed out when I commenced my remarks) that we will be prohibited from progressing at all. We want to progress a little more in New Mexico, and with Colorado taking more and more water above

(remember this bill does not interfere with Colorado in the slightest degree), I suppose it would finally get down so that if only enough water to irrigate 41,000 acres "got away," so to speak, from Colorado and flowed down to this dam, they would get all of that and we would be left an utter desert. We want it distinctly understood that if they are permitted to build this international dam at El Paso we shall be permitted to build our dam either with our own money or with such money as we can interest in the matter, provided all the time (and you may make that proviso as full and as strong as you choose) that we do not keep from going down as much water as has been heretofore appropriated according to the natural and universally accepted law of water rights. That is all.

Mr. BURKHART. If at the time of the building of the dam 60,000 acre-feet of water have been appropriated in Mexico and Texas, we are compelled, of course, to allow that much water to go by. We do not object to that at all; but we do object to Congress saying that we shall not hereafter take any water out of our dam until the El Paso dam is full, and that is just what this act means.

Representative HITT. You think that if the United States, instead of an ordinary corporation or individual, constructs the dam at El Paso, it would imply some higher right to have that impounding of water completed before anyone else should take any of it?

Mr. FERGUSON. Yes, sir; and the bill is objectionable, further, because they put it on the ground that it is a payment to old Mexico.

Representative BROWN. Is it not rather unusual for an act to direct the Secretary of State to do certain things?

The CHAIRMAN. Yes; the act is an extraordinary one in many respects, but that is not relevant to this discussion.

Mr. FERGUSON. I have not talked to the present Secretary of State about it, but I talked fully to the other one. He heard me very fully, and became very much interested; and I am satisfied that he was thoroughly against any such action as is proposed.

Representative STEPHENS. It is late, and I will simply ask of the subcommittee leave to file with it a statement in writing.

The CHAIRMAN. I think there is no objection to that.

Mr. FERGUSON. We would like the same privilege, Mr. Chairman.

The CHAIRMAN. I know from expressions from gentlemen of the committee who have not been able to be present this morning that they would all be glad to have any information that can be given by either side.

Representative BURLESON. Just prepare a full statement and submit it.

Mr. FERGUSON. Yes, sir; we will do the best we can in that respect.

Mr. BURKHART. I want to say, in justice to ourselves, that we came away very hurriedly. The governor appointed this committee, and those persons who were entirely familiar with the conditions in the valley, etc., were not able to come. The attorneys of the Elephant Buttes Dam Company are familiar with the testimony in that case—

Representative BURLESON. Get them to help you.

Mr. FERGUSON. We will. That is why we appreciate the privilege of filing a written statement, because they can help us by reason of their familiarity with the case.

We desire to thank the committee very much for the courteous hearing it has accorded us.

(The committee thereupon adjourned.)

MESSRS. HEATWOLE, BROWN, AND BURLESON,
*Subcommittee on bill No. 9710 of the
House Committee on Foreign Affairs.*

GENTLEMEN: In reply to the argument of the Delegate from New Mexico, who objects to the passage of my bill, No. 9710, I desire to submit the following propositions:

First. The oldest settlements in the Rio Grande Valley are immediately below El Paso and Juarez. These settlers make their living by farming the valley lands of the river, and used water from the river; hence they have had for centuries a prescriptive or riparian right to the use of the water of the river for that purpose, which the courts of our country have always upheld.

Second. The citizens of New Mexico and Colorado have deprived these settlers of the use of the river water, and thus caused the settlers on both sides of the river to lose their orchards and vineyards entirely, and their annual crops have been lost for the last fifteen years for the reason that nothing can be raised in that valley except by irrigation, and the citizens of the United States above El Paso are using all the water of the river except the storm waters.

Third. This bill proposes to store up this storm water in a great international reservoir 4 miles above El Paso, and thus restore to the citizens of Mexico and Texas the water that they have been so unjustly deprived of by the citizens of the United States. The bill provides that one-half the water so impounded shall be given to the citizens of Mexico to recoup them for their damages, and the Mexican Government, in consideration of building this dam and of the division of water, agrees to withdraw her claim for damages against the United States for using all the water of the river in New Mexico and Colorado. These claims are made by Mexican farmers on the river valley, and amount to many millions of dollars. The citizens of Texas, my constituents, have been equally damaged. The building of this dam and reservoir, according to the estimates of the Government engineers, will be \$2,317,113, and this is the amount I ask the Government to expend by passing this bill.

The delegates from New Mexico oppose the passage of this bill, and state that the United States should not expend money to build up Mexico. I answer that we are only by this bill restoring to Mexico and Texas the water we have unjustly deprived their citizens of by permitting the citizens of the United States in New Mexico and Colorado to use all the water of the river during the crop-growing season of the year.

The citizens of Mexico and Texas have already been damaged ten times more than the dam will cost the Government. The remedy pointed out by this bill will settle this vexed question of damages with Mexico and do justice to a neighboring friendly nation, and, in my judgment, should become a law before this Congress adjourns.

The delegates from New Mexico oppose the passage of this bill because they say it will deprive New Mexico of the use of the water of the river and prevent the building of another dam in New Mexico for irrigation purposes. This is not true. The first section of the bill says: "That nothing in the acts of Congress (naming them) shall be so construed as to authorize the appropriation and storage of the waters of the Rio Grande or its tributaries in the Territory of New Mexico to which others have right by prior appropriation." Hence this

bill only prevents the citizens of New Mexico from storing the waters of the Rio Grande or its tributaries in the Territory of New Mexico, to which (waters) others (Mexico and Texas) have right by prior appropriation. Why should any honest man in New Mexico want to take from Texas and Mexico water that they (Texans and Mexicans) have a right to by prior appropriation? This is all that the first section of this bill does, except provides a punishment for taking water from the river to which others have a right by prior appropriation.

That part of the section uses the words, "The unlawful appropriation and storage of water may be prevented," etc. The New Mexico delegates complain because they can not use the water of the river unlawfully, and this bill only makes it unlawful to use or impound water to which others have a right by prior appropriation. However, these delegates were finally driven to admit that they had no objection to this, the first section of the bill, thus admitting that New Mexico should not use or store water to which others (Texans and Mexicans) have right by prior appropriation.

The delegates of New Mexico having withdrawn their objection to the first section of the bill, retreat to the second section (the bill has only two sections). This section provides for making a treaty with Mexico, and for the building of the dam at El Paso. Why do these delegates object to the second section? New Mexico can have no interest in water that has already flowed past their territory and passed into the territory of Texas and Mexico, and when it touches Mexican territory its disposition becomes an international question; and it is very hard for me to determine just what New Mexico has to do with this international question.

I have shown that this bill only protects the prior water rights of the citizens of Texas and Mexico and will prevent any person or corporation from infringing upon their prior water rights and punish them for so doing. Now, the Elephant Butte Dam Corporation proposes to impound enough of the waters of this river to fill an enormous reservoir 125 miles above El Paso.

The United States Government engineers, after carefully measuring and estimating the flow of the water of the river for years, state that there will not be more than water enough in the river to fill this reservoir; hence, if the Elephant Butte dam is built, the El Paso dam would be useless, for the reason that there would be no water in the river to fill it; therefore the necessity of the second section of the bill is apparent, and the delegates from New Mexico do not want the proposed building of the Elephant Butte dam interfered with, and they, in fact, represent this company before this committee.

These delegates charge that this bill is gotten up in the interest of a syndicate at El Paso, who have bought up large quantities of land in the valley below El Paso and Juarez, and are seeking to have the Government to build the dam so as to make their land valuable. I asked them to give the name of the syndicate. They did not do so. I then asked them to give the name of one man who composed the syndicate; they named W. W. Mills, the present United States consul at Chihuahua, Mexico. I know Mr. Mills. He is a poor man, and, I am informed, owns nothing but a town lot which he occupies as a homestead in El Paso. He does not belong to a syndicate as charged, for the reason that no such syndicate exists except in the imagination of the delegates from New Mexico. "Men living in glass houses should never throw

stones," and their delegates, who come before the American Congress and so freely charge unworthy motives against others, should at least come with clean hands, yet they admit that they want the Elephant Butte syndicate to be permitted to do the very thing that they charge the supposed El Paso-Juarez syndicate with wanting to do.

The Elephant Butte syndicate is already organized and is proposing to impound enough of the water of the Rio Grande River to fill their reservoir, and to sell this water to the citizens below on the river, and thus make merchandise out of the water, to which, in the language of my bill, others have a right by prior appropriation. I submit that Congress should not give this water monopoly to this Elephant Butte Company, and I do not believe it will do so, and that it will pass this bill and equitably distribute the waters of this river among the people who have a prior right to it, whether they are Mexicans or Americans.

This Republic is too great and too just to do wrong to the friendly sister Republic of Mexico.

I beg leave to file herewith a petition from the citizens of El Paso, together with letters and newspaper articles bearing on this subject, and to submit the whole for the information of the committee.

Respectfully,

JNO. H. STEPHENS.

HOUSE OF REPRESENTATIVES,
Washington, D. C., March 29, 1900.

Hon. JOHN HAY, *Washington, D. C.*

SIR: I have the honor to hand you herewith a letter from the Department of Justice in regard to my bill for the equitable distribution of the waters of the Rio Grande River, and which bill will be presented to you, for your consideration, by the chairman of the subcommittee—Mr. Heatwole—of the House Committee on Foreign Affairs.

I also desire to call your attention to a letter from myself to Mr. Day, your predecessor, which letter explains the object and necessity for this legislation. Also to a personal interview that Senator Culbertson, of Texas, and myself had with you on this subject recently. In view of the great necessity for the relief that this bill will give the citizens of Mexico and Texas I hope that you will give it your immediate and favorable consideration.

Respectfully,

JNO. H. STEPHENS, M. C.,
Thirteenth District, Texas.

HOUSE OF REPRESENTATIVES,
Washington, D. C., January 27, 1900.

Hon. JOHN H. STEPHENS.

MY DEAR SIR: Illness has prevented an earlier consideration of your bill. This office, of course, must abide by departmental action, and the Department's policy must be hands off as to legislation regarding this matter. It would seem not to be proper to do anything by way of urging legislation, while we are in charge of litigation for one of the parties, which would interfere with the course of the litigation. We might, therefore, better refrain from saying anything which could be so construed.

On the other hand, while not urging or seeming to aid such legislation, we should not desire to influence in any manner your fighting in Congress for the interests of your constituents whose interests are threatened by litigation. We understand that is just what the Colorado people are doing on the other side of the case.

I have looked the bill over carefully, and I should think it admirably adapted to compass the whole interests of your constituents if passed.

I shall be glad to see you and give you any information in my power at any time.

Yours, truly,

M. C. BURCH.

OFFICE OF THE ATTORNEY-GENERAL,
Washington, March 15, 1900.

The SECRETARY OF STATE.

SIR: On February 24 you forwarded to me draft of a bill proposed to be introduced in Congress to provide for the equitable distribution of the waters of the Rio Grande between the United States of America and the United States of Mexico, with a copy of Senate Doc. No. 229, Fifty-fifth Congress, second session, and requested me to advise you whether the bringing forward of this or a similar measure at this time would be inexpedient or likely to cause embarrassment to the Department of Justice in the prosecution of the pending litigation against the corporations who are seeking to construct a dam and reservoir at Elephant Butte.

I have examined the proposed bill and see no objection to it from the point of view which you have indicated. I am not sufficiently acquainted with the material facts to be able to give you an opinion upon the general subject of the projected international dam. That enterprise involves so many questions of scientific and engineering knowledge that I do not feel competent to express an opinion upon it. I have no doubt that many persons who have heretofore used the waters of the Rio Grande at points below El Paso for irrigation purposes have been very seriously injured by the storage and diversion of the water by dams, reservoirs, and irrigating canals.

I would point out to you, however, that the sole basis of jurisdiction in the Federal courts, so far as the United States Government is concerned, is interference with the navigable capacity of the stream. The use of the waters of the river for purposes of irrigation is not a use connected with the regulation of commerce, and the act under which the present suit is being maintained against the Rio Grande dam and Navigation Company is one solely for the protection of commerce.

Very respectfully,

JOHN W. GRIGGS,
Attorney-General.

EL PASO, TEX., *April 11, 1900.*

Hon. JOHN H. STEPHENS,
House of Representatives, Washington, D. C.

MY DEAR MR. STEPHENS: I received your letter of the — ultimo, and I am sorry to note that Secretary Hay has not committed himself in favor of the international dam. You have undoubtedly read the

Senate document on the dam, and as Mr. Olney was so much in favor of it for the purpose of getting the friction between this country and Mexico out of the way it should be only proper in Mr. Hay to uphold Mr. Olney and his predecessors.

At present the river is absolutely dry, an occurrence which the old inhabitants of 80 and 90 years of age have not seen before. The situation is, in fact, a calamity, and every eyewitness has no other opinion about. In speaking the other day with United States Consul Kendrick, of Paso del Norte (Juarez), he told me that the Government could hardly imagine such a horrible state of affairs, and he considered it his duty to call the Department's attention to this pitiable state of affairs. He says this country is going back every day. One farmer on the Mexican side who used to employ 16 farming hands now only employs two, the other 14 having gone to Clifton, Ariz., to work in mines; and this is about a fair example of how the country has depopulated. I think United States Consul Kendrick will make his report to the Department very soon, and it might be well a few days after the receipt of this letter to call upon the Secretary of State again, and I think most likely he will give you some information.

I have written to Senator Mills as per inclosure, which kindly return. You may encounter some difficulties in the House on account of the dam breaking at Austin; but this dam was never considered a safe structure, and, in fact, it burst the day before it was inaugurated. Engineering art has so far advanced that a dam can be built absolutely safe.

If Mr. Hay should give his consent and the committee favorably report the bill, I would be pleased if you would write to me at once.

I inclose you a clipping from the Times which shows that the drought is worse than ever before this year, and all the farming population is relying upon you for the relief of their embarrassing situation.

Yours, very truly,

MAX WEBER.

THE RIO GRANDE VALLEY—A REPORT ON IRRIGATION AND AGRICULTURE FROM CONSUL KINDRICK.

Charles W. Kindrick, consul at Ciudad Juarez, writes the State Department as follows:

"For the past two years the farmers in the Rio Grande Valley below El Paso, Tex., and Ciudad Juarez, Mexico, have had no water with which to irrigate their lands, and there is no promise of a current in the Rio Grande River during the present year—that is, with the exception of the extra seasonal water that comes down for a brief period, principally during the month of May. This flood water serves no practical purpose, unless it could be held in reserve. Agriculture depending upon irrigation derives but slight benefit from water obtainable for about one month in twelve. It may be stated, therefore, that this valley is now in the third year of a drought, and the consequences are patent to the most casual observer. Agriculture has languished, and dwindling population and diminished business testify to the apparently hopeless condition due to the lack of sufficient water to irrigate the soil. Fruit trees have withered and died, alfalfa farms have burned and perished, and vineyards once producing an abundance of grapes have ceased to yield. People have been compelled in many instances to seek a livelihood elsewhere and in other pursuits than the cultivation of the soil. Formerly there were in Juarez and the valley below this city about 20,000 people; now there are less than 8,000.

"Spreading southeast of Ciudad Juarez are more than 100,000 acres of land as fertile, when irrigated, as the bottoms of the Nile. Mr. Weber, a representative business man of this place, who has a thorough knowledge of existing conditions and

latent resources, says the valley below and about El Paso and Juarez is capable, with sufficient water, of producing more than \$2,000,000 annually in grain, grass, and fruits. Without irrigation it is a dry waste of alluvial deposit upon which nothing will grow but cotton trees and useless bosk.

"From the fact that the soil is naturally so fertile it may be reasonably concluded that more water than formerly has been drawn from the river in Colorado and New Mexico. There population has rapidly increased and agriculture has been extended to the limit of the river's capacity to supply irrigation. The consequence is the river ceases to be a river at all before it reaches El Paso, Tex., and Ciudad Juarez. According to the census of 1890, 4,000 persons were engaged in the cultivation of 100,000 acres of land in the Rio Grande Valley of New Mexico. The number of persons engaged in agriculture and the number of acres added to those already cultivated, it is estimated, have more than doubled. As the amount of water drawn from the Rio Grande in northern New Mexico can not be diminished, the outlook for the farming and dependent interests in the valley about and below El Paso and Ciudad Juarez is unpromising.

"Each year, with the melting of the snow in Colorado, there is a flood in the Rio Grande. Sometimes the river becomes a wide, raging torrent of large volume. The water dashes by for a brief period and then the river becomes dry again. In 1897 the flood came in such volume as to endanger property along its course. In 1898 it was almost as high. In 1899 there was a brief flow, which was quickly spent. The outlook for a large volume of water this spring appears to be unpromising.

"This valley will never again prosper unless something is done to provide water for the purposes of irrigation. And whatever may be the law supporting or opposing the claims of the people of Mexico against the United States for the loss occasioned by the diversion of the water, the construction of a dam by Government to impound the flood waters of the Rio Grande would constitute an act of comity which would restore prosperity to a languishing valley and benefit the inhabitants of western Texas and southern New Mexico, as well as the citizens of Mexico residing on the south side of the Rio Grande."

[El Paso Daily Times, Tuesday, April 10, 1900.]

DISMAL OUTLOOK FOR THE FARMERS—THE RIO GRANDE WILL RUN DRY EARLY THIS YEAR—GLOOMY PREDICTIONS CONTAINED IN THE "SNOW BULLETIN"—LITTLE SNOW IN THE RIO GRANDE WATER SHED—FARMERS SHOULD PUT IN PUMPS—MR. RUSSELL DISCUSSES THE SITUATION.

F. H. Brandenburg, director of the Colorado section of the United States bureau's climate and crop service, has issued, under date of April 7, a special "snowfall bulletin," which is of prime interest to the people of the Rio Grande Valley. This bulletin gives a gloomy forecast for water during the present season. The paragraph of the general outlook is as follows:

"There was a deficiency of snowfall in nearly all parts of the mountain region during March. Correspondents comment upon the absence of heavy storms, and state that under the influence of the prevailing high temperatures the light falls disappeared quickly. At the close of the month the valleys and southern slopes were practically bare, and melting had begun in sheltered localities—three or four weeks earlier than usual. At great altitudes the snow is still solid, especially that which fell during October, November, and December. The consensus of opinion is that, as compared with last year, the flow will be of less volume and cease much earlier."

The reports from the various observers in the Rio Grande watershed are summarized in the bulletin as follows:

"Rio Grande watershed: Carson, granulated; with normal weather melting will be rapid and flow will cease by July 1. Creede, no storms during March; outlook bad. Lost Trail Creek, south hillsides are bare; depth about 2 feet in timber. Wagon Wheel Gap, southern slopes bare. Alder, will go rapidly with warm weather. Villa Grove, flow will be less than usual. Osier, about one-third as much as a year ago; toll road open for wagons—earliest in twenty years."

Commenting on the above report, Secretary Russell, of the Chamber of Commerce, said:

"It is best that the farmers and fruit growers of the valley should be told just what they may expect. It will be remembered that last year the observer at Del Norte, Colo., on the Rio Grande, above the San Luis Valley, reported the flow of the river at that point was but 50 per cent of the normal. The outlook this year is for a flow no greater, if as great. Everyone needing water for irrigation should therefore

plan to make the most of what does come down. It is possible, of course, that the flow will not be as scant as now appears probable.

"I want to repeat again what I have said many times before during the past two years in the Times. No one can safely undertake to raise farm products, fruit, or vegetables in the Messilla or El Paso or Juarez valleys without a pumping plant to supplement the river supply. In such seasons as that of 1899, and presumably the present season, the flood waters of the Rio Grande, even if all stored by a great reservoir at El Paso or Elephant Butte, will not suffice for profitable agriculture. The farmer, orchardist, and gardener will use what water he can get from the river, but he must not rely on that source of supply to make his crop."

Statement of the losses of the citizens of El Paso County, Tex., because of lack of water for irrigation, caused by the unlawful appropriation of the waters of the Rio Grande River in New Mexico and Colorado during the four years next past.

Hon. JOHN H. STEPHENS,

House of Representatives, Washington, D. C.

DEAR SIR: Being thoroughly familiar with the facts, we, the undersigned, do hereby certify:

That the population of the Rio Grande Valley below El Paso within the last ten years has decreased at least one-third.

That the number of acres of land cultivated by actual settlers has been reduced at the lowest estimate to little more than one-half what it was in 1890.

That the market value of the lands has been reduced from \$25 to \$5 per acre, and is hardly salable at any price.

And that the aggregate losses to the property owners in said valley, at an extremely low estimate, would be \$4,000,000.

For a more definite statement of the losses suffered see tabulated statement hereto attached:

STATEMENT.

Total number of acres of land in the El Paso Valley subject to irrigation.	76,800
Number of acres of land under cultivation annually from 1895 to the present time	36,000
In 1895, there being very little water, the crops on the lands then under cultivation amounted to about one-sixth of the ordinary yield, or.....	\$120,000
Losses for the year 1895 on lands not under cultivation, \$10 per acre—40,800 acres	408,000
In 1896 but little water up to June, then river entirely dry; result, loss of \$20 per acre on cultivated lands.....	720,000
Losses on uncultivated lands for 1896	408,000
In 1897 ditches impaired by severe floods, hence only half crop; loss of..	360,000
Losses in 1897 on uncultivated lands.....	408,000
In 1898 full crop on cultivated lands, accounted for by heavy and unusual rains.	
Loss on uncultivated lands for 1898, which would have been in cultivation had we received waters due us in past years.....	408,000
In 1899 but little water up to May 15, and then the river entirely dry; losses full	720,000
Losses on uncultivated lands for 1899	408,000
Total amount of losses	3,960,000

The above statement is a very limited statement of the losses sustained by the landowners of this valley for the reason that a yield of \$40 to \$50 per acre, where plenty of water can be had, is not at all unusual.

In view of the serious conditions confronting the citizens of our county because of this unlawful appropriation of the waters of the Rio Grande River, we most earnestly urge you to introduce the proposed bill for the international dam at El Paso and to use every reasonable effort to secure its early passage.

G. W. HUFFMAN, tax assessor, El Paso County; LOUIS W. EVANS, superintendent Franklin Irrigation Company; J. C. JONES, farmer, Ysleta, Tex.; J. J. SMITH, farmer, Ysleta, Tex.; JOHN R. HUGHES, captain Company D, State Rangers, stationed in Rio Grande Valley; BENIGNO ALDENETE, manager of Ysleta Ditch; M. LOEWENSTEIN, ex-county treasurer and ex-corporation assessor of Ysleta; L. FOIT, grape grower and orchardist; GEORGE BUCHANAN, merchant, Ysleta, Tex.; JOSEPH MAGOFFIN, mayor of El Paso, Tex.; S. B. CARBAJAL, ranchero; C. O. COFFIN, grower of Bartlett pears; MOSES DILLON, collector of customs; C. N. BUCKLER, ex-district judge; S. J. STEUDENTHAL, president El Paso Chamber of Commerce; JAMES H. WHITE, tax collector, El Paso County; C. R. MOREHEAD; JNO. JULIENE, ex-county commissioner; J. P. CONNOR, county treasurer; J. B. W. BURTON, manager Burton, Ling & Co.; GASPAR GIRON, manager flour mill, San Elizario; W. B. BROCK; W. F. ROBINSON, Fort Hancock; CHARLES DAVIS; CHAS. B. PATTERSON; J. H. COMSTOCK; C. W. MILLER, M. D.; W. H. WINN, ex-county assessor from 1892 to 1898; B. LIEBMAN, miller, Ysleta; C. A. BLANCHARD, railroad agent, Ysleta, Tex.; J. J. SCHARIES & MUELLER, Clint post-office, Tex.; J. H. CONKLIN, real estate; MILLARD PATTERSON, attorney at law; W. W. BRIDGERS, representative ninety-sixth district; PARK W. PITMAN, county clerk; W. R. MARTIN, superintendent G., H. and S. A. Railway Company; M. C. EDWARDS, lumber; Z. T. WHITE; J. A. SMITH; T. J. BEALL; HORACE B. STEVENS, real estate and insurance; JOHN A. HAPPEE, real estate; MAX WEBER; A. H. PARKER, county surveyor; J. J. MUNETZ; JAMES R. HARPER, county judge; W. J. HARRIS, county commissioner, precinct No. 2; JUAN ARMENDARIZ, county commissioner, precinct No. 3; G. N. GARCIA, jr., county commissioner, precinct No. 4; A. COURCHESUSS, county commissioner, precinct No. 1; A. G. FOSTER; FRANK DEL BUONO; A. W. WALTHALL, district judge; G. P. PUTNAM, superintendent schools; W. W. TURNEY, state senator, twenty-fifth district; PEYTON F. EDWARDS, attorney at law; PEYTON J. EDWARDS, county attorney, El Paso County, Tex.; F. E. HUNTER, ex-county judge, El Paso County, Tex.; ADOLPH KRALSALZ, merchant; MCCATCHEM, PAYOR, & Co., wholesale hay and grain dealers, also dealers in agricultural implements and wagons; R. C. LIGHELNLY, merchant; FELIX MARTIALS, broker; G. McNAUGHTON, illustrator.

EL PASO, TEX., *April 26, 1900.*

Hon. G. B. HEATWOLE,

House of Representatives, Washington, D. C.

DEAR SIR: Although not having the honor of your personal acquaintance, I desire to trespass upon your kindness in regard to a matter which is of the most vital importance to this city and the adjacent community, and its very existence depends more or less upon it.

The city of El Paso is situated midway between the source and the mouth of the Rio Grande, and the water here has decreased year by year for the last twenty years on account of the increased use of the waters of the Rio Grande in Colorado and New Mexico by their greatly increased population until the river here has water only for two or three months in the year and during the balance is practically dry.

The farming interests have suffered so much both on the Texas and the Mexican side that they have dwindled down to practically nothing. The Mexican population, which depends altogether on farming, has decreased in the last fifteen years from about 20,000 to 5,000 population, and our own side, which formerly had a farming population of about 10,000, has decreased to about 2,000. In order to remedy this calamity it has been proposed and agitated for the past eleven years to impound the flood waters in an international reservoir to supply the two countries, but the matter could not be agreed upon by the two Governments until the last year of Mr. Cleveland's Administration, when Mr. Olney took up the matter with such vigor that he was anxious to conclude a treaty before the Administration went out, but on account of unexpected trouble with an English company, which, however, is now of minor importance, the matter was laid over. And now on account of pressure brought upon our Representative in Congress, Hon. John H. Stephens has finally introduced a bill for the construction of a dam and reservoir above El Paso to remedy this evil state of affairs.

I have been informed that you are a member of a subcommittee of the Foreign Relations Committee to report on this bill, and this letter is addressed to you with the object of making you acquainted with the great necessity of getting this dam and reservoir constructed to relieve the evil condition of our valley, and also because the shortage of water has for a long time been the cause of irritation between this country and Mexico, whose relations otherwise have been of the most friendly character.

There is no denying that the United States has profited a great deal by the use of this water, which rightfully belongs to the old settlers of this community, their ancestors having used the water they are now deprived of for nearly three hundred years, and it is a crying injustice that these people should be shut off from water now to enrich others in Colorado and New Mexico; and the construction of this dam would not interfere with the prosperity of Colorado or New Mexico, only limiting them to the flow in gravity ditches and allowing the surplus water from the spring floods to be impounded here in a reservoir.

The matter has been before the United States Government for the last twelve years, and as it has recently been brought up in Congress, you would do me a great favor by using your influence with the other members of the subcommittee and see that the committee make a favorable report, recommending the immediate construction of this dam.

I take this liberty of addressing you because I was reared in Mankato, Minn., lived there twenty-two years, and it is probable that we may have many mutual acquaintances there. Refer you to L. P. Hunt, editor of Mankato Free Press and postmaster; H. P. Chrestensen, S. F. Barney, of Mankato, the last two brothers-in-law of mine; and Judge Flandreau, St. Paul. I have interests in Minnesota and visit there nearly every year.

I started in business here nineteen years ago, and I am at present the acting president of our chamber of commerce. You will do me a great favor by taking an interest in this matter, and you can rest assured that the people of this community will appreciate anything you can do to ameliorate their unfortunate condition by impounding the waters here for their use.

Very truly, yours,

W. G. WALZ.

SANTA FE ROUTE.

LAS ANIMAS, COLO., *April 12, 1900.*

HON. DAVID B. HENDERSON,

Speaker, House of Representatives, Washington, D. C.

DEAR SIR: If the writer is correctly informed, a bill for the building of an international dam across the Rio Grande at El Paso, Tex., has been presented in the House by the Representative from the western district of Texas, the provisions of which embody very rank class and post facto legislation not warranted by constitutional authority.

In brief, the bill provides, if information is correct, for the building of said dam to satisfy the claims of Mexico for alleged damages due to lack of water in the Rio Grande at that point, said to be caused by the diversion thereof in New Mexico and Colorado for irrigation. The bill would fix a responsibility and obligation on the United States to recognize and relieve the alleged distress of Mexico from lack of water said to belong to her and diverted from the Rio Grande by the people of New Mexico and Colorado at some point or points wholly within the limits of the United States. This seems preposterous enough, but the special feature of the bill to which I wish to call your attention particularly is that wherein it is provided that the building of all other dams and all other appropriation of water on the Rio Grande above El Paso and within the United States shall be prohibited.

This provision, the reason and necessity for which will presently appear, viewed from the standpoint of the promoters of the said El Paso dam, is intended specifically to prevent the building of another dam across the river at Elephant Butte, 125 miles above El Paso.

This latter project is being promoted to irrigate the Rio Grande Valley from that point south by the Rio Grande Dam and Irrigation Company of Las Cruces, N. Mex., and El Paso, Tex. This company was organized in 1893, and in 1894 or 1895 secured the requisite authority for appropriation of water and storage thereof behind the proposed dam at Elephant Butte from the Territory of New Mexico and the Secretary of the Interior in accordance with the laws.

After this company had begun the construction of its subsidiary works the promoters of the El Paso Dam—the same persons who are now fathering the aforesaid pending bill—succeeded in having an injunction issued by the Attorney-General of the United States restrain-

ing the construction of the Elephant Butte Dam. This was in 1896. The case went to the United States Supreme Court, being decided in favor of the defendant in every case and point, except that the Supreme Court sent it back to a court of inquiry in New Mexico on questions of fact as to whether the proposed dam would impair any actual navigation of the Rio Grande. This latter court again found in favor of defendant last December, but the prosecution again appealed from the decision, finally dissolving the injunction, and the matter now pends in the supreme court of New Mexico.

Now, I wish to call your attention to these facts, of record:

First. The rights of the Rio Grande Dam and Irrigation Company have, in every case, been sustained by the courts.

Second. In its decision, the Supreme Court of the United States refused to recognize as valid Mexico's claim to waters of the Rio Grande within the territory of the United States—this point being a contention of the prosecution—or to admit the validity of any claim for damages.

Third. In the hearing of the court of inquiry on the facts, the prosecution failed to sustain its contention that there was not water enough for the two reservoirs, the one at El Paso, the other at Elephant Butte, but modified it to the showing that in exceptional seasons only would there be a deficiency.

Having failed in the courts, the necessity of the pending bill is now apparent.

Now, the contention of the supporters of this bill is that never should Mexico be short of water, even in deficient years; hence the absolute necessity of prevention of all storage above El Paso.

Please note that the pending bill proposes to cut off vested rights in New Mexico and give them to aliens—citizens of Mexico. It would take waters within the United States, carry them past the doors of the rightful owners, famishing for lack of them, and give them to Mexico. Can this be defended on any ground? Is this the way for the United States to be relieved from questions of damage? Could the courts sustain such an act? If the real effect of this bill is once understood it will never get to the Senate—not even a favorable report to the House. Since the organization of the Rio Grande Dam and Irrigation Company the writer has had the honor to be its chief engineer; has made an intimate study of the water-storage problem, and knows whereof he speaks.

Our contention is that the waters of the Rio Grande in New Mexico and Colorado belong to those Commonwealths, Mexico having no shadow of claim to them.

We can show, moreover, that there is an abundant water supply for all.

Here are the cold figures:

The capacity of the Elephant Butte reservoir is 253,000 acre-feet; that of the El Paso one is 536,000 acre-feet. The mean annual flow of the river (Rio Grande) is not less than 1,000,000 acre-feet. The irrigable area of the entire valley within the limits affected is about 300,000 acres.

This presents all of the essentials of the whole matter. The data given herein are all matters of record in the courts in the hydrographical branch of the United States Geological Survey, in the records of my company, and even in those of the El Paso project.

The real secret back of the unwarranted fight on the rights and interests of New Mexico and Colorado is the determination to create an absolute water monopoly at El Paso, and that, too, wholly at the expense of the United States and their citizens. Mexico is asking much and giving nothing for her relief. Her enlistment in that project was a brilliant but insincere stroke of diplomacy. Bah! for her claim of \$22,000,000 damages!

Will you kindly submit this statement for the consideration of the proper committee, and I am sure you will throw your influence for justice and equity as you find them. I am confident the gentleman from Texas does not realize the full measure of the terrible calamity this bill would be for New Mexico in his laudable intention to help his own district.

Yours, very truly,

J. L. CAMPBELL,
Chief Engineer R. G. D. and S. Co.,
Locating Engineer A. T. and S. F. Rwy.

APRIL 10, 1900.

DEAR SIR: On the 19th ultimo Mr. Stephens introduced a bill (H. R. 9710) entitled "A bill to provide for the equitable distribution of the waters of the Rio Grande River between the United States of America and the United States of Mexico, and for the purpose of building an international dam and reservoir on said river at El Paso, Tex."

The main object, as proposed by this bill, is to prevent the construction of dams and reservoirs for purposes of irrigation on the Rio Grande River above El Paso, and secure the construction of a dam at El Paso; an expenditure of \$2,317,113.36 to be paid for out of the United States Treasury; the waters to be impounded by said dam to be shared, share and share alike, by the United States and Mexico.

The whole proposition is now involved in litigation, growing out of an injunction suit brought by the United States to prohibit the construction of a dam and reservoir at Elephant Butte, about 125 miles above El Paso. The allegations in the bill of complaint embrace the question of the obligation of the United States to furnish to Mexico a moiety of the waters gathered on our own soil and passing down the Rio Grande River. It is alleged by the Attorney-General in that case that both by treaty obligation and international law the United States is bound to furnish water to the Mexicans. In fact, practically every question that can be raised under this bill is now before the court. The suit was commenced in one of the district courts of New Mexico and appealed by the United States to the Supreme Court of the Territory, and again appealed by the Government to the Supreme Court of the United States. Our Supreme Court decided a portion of the questions involved and sent the case back for a further hearing. It has again been tried in the district court and is now again pending on appeal by the United States in the supreme court of the Territory. I think I can show that the object of this bill is to settle a lawsuit by legislation.

In behalf of large financial interests that will be seriously affected should the proposed measure become a law, I ask to be heard before your committee at such time and place as you may designate.

You will find the case to which I referred reported in 174 U. S., 690.

I am somewhat familiar with all the phases of the controversy and am sure I can give the committee some valuable information.

Very respectfully, yours,

J. H. McGOWAN.

Hon. ROBERT R. HITT,
*Chairman Committee on Foreign Relations,
House of Representatives.*

SUBCOMMITTEE OF THE COMMITTEE ON FOREIGN AFFAIRS,
HOUSE OF REPRESENTATIVES,
Wednesday, February 6, 1901.

The committee met at 11 o'clock a. m., Representative Heatwole in the chair.

Brig. Gen. Anson Mills, U. S. A. (retired), and Mexican Boundary Commissioner; and Mr. Max Weber, of Ciudad Juarez, Mexico, appeared before the committee.

(J. H. McGowan, esq., also appeared before the committee during the progress of the hearing.)

The CHAIRMAN. General Mills, you are probably familiar with the bill which has been introduced by Mr. Stephens, of Texas, entitled H. R. 9710, providing for an equitable distribution of the waters in the Rio Grande River between the United States of America and the United States of Mexico, and for the building of an international dam and reservoir on said river at El Paso, Tex. I find here a communication which you have addressed to the chairman of the committee, under date of June 4, 1900.

General MILLS. Yes, sir; I remember that communication.

For General Mills's letter of June 4, 1900, see page 266.

matter some twelve years ago. This matter was then under the War Department. I made the first examination for a proposed dam and reservoir in the succeeding year and have been connected with the project more or less ever since.

The CHAIRMAN. You were detailed by the War Department?

General MILLS. The War Department, for duty under the State and Interior Departments. I also had lived at El Paso—now forty-four years ago—and had observed during a four years' residence there their civilization and the agriculture that was going on on both sides of the river where they had, as a rule, abundant water for all the lands then under cultivation—probably 40,000 acres. When I returned twelve years ago I found that the agricultural interests were disappearing by reason of a decrease in the flow of water, and in following out my instructions and investigating the cause I found that it was by reason of the large appropriation of water, especially in Colorado, but also in New Mexico.

The CHAIRMAN. If you will permit me to interrupt you, about what proportion of the water was taken by Colorado?

General MILLS. Our more recent investigations showed that probably three-quarters of the taking of water was from the development in agriculture in Colorado and one-fourth, perhaps, approximately, in

New Mexico. I, together with my Mexican associates detailed by the Mexican Government to make these investigations, came to the conclusion that the simplest, the most feasible, remedy was to store what are generally known as flood waters, that pass on in the early spring to the Gulf, instead of attempting to interfere with or control the appropriations that had already been made in Colorado and New Mexico. So we got up plans and specifications for a large dam and reservoir at El Paso, which seemed to be approved by both Governments, and I understood a treaty had been agreed upon, but later on a communication was referred to me by the Secretary of State, inclosing a protest from the Mexican Government against the building of the dam then projected 125 miles above El Paso by what was known as the Elephant Butte or Rio Grande Dam and Irrigation Company whereby, by their prospectus, they claim to have the right by charter from New Mexico for the entire flow of the river. I was directed by the Secretary of State to investigate this matter and to determine whether there was enough water to supply both the newly projected dam and the international dam, the protest of Mexico stating that unless there should be water enough they would withdraw from consent to the treaty, in which they had agreed to waive the claim for damages against the Government in case the international dam should be built at the expense of the United States Government.

We investigated very thoroughly, and Captain Derby, of the United States Corps of Engineers, was directed to report to me, and we all concurred—both the commissioners and the engineers of both nations—from measurements of the flow for years, and the taking of waters from the river and its tributaries in Colorado and New Mexico, that there would not be water enough to supply both these great reservoirs. So we recommended that unless some restraint could be placed upon this reservoir contemplated, and all other future reservoirs in New Mexico, that the dam would not be a remedy for Mexico; but if the projects now contemplated and all future projects contemplated in New Mexico could be restrained so as to prohibit them from taking water to which the citizens of Mexico had a right by prior appropriation, that that would be sufficient. We recommended this because we understood that Mexico had no remedy at law internationally; that in the United States, where the courts were supreme, the citizens and States had remedies against each other that they could apply; but Mexico could not appear in our courts to indemnify herself by judgment of the courts. So we thought it best that the Government should pass a law making it unlawful for any projected dam to take water to which Mexico had right by prior appropriation.

We also investigated, as nearly as we could, the amount of water which the citizens of Mexico had used in the El Paso Valley prior to the depletion caused by the taking excessively of waters above, and as near as I remember, I think we determined that 500 second-feet were formerly taken and used by the citizens of the valley of El Paso, so that if these people above were restrained from using any more than would leave to the people below this 500 second-feet, that there was no objection to building all the dams and reservoirs that they might desire to build in New Mexico.

As to Colorado, it being a State, we were advised that it was not practicable to restrain a State, and there was another consideration. The fall in Colorado is so great that it would be impossible to build a

dam there to contain any large amount of water such as these large reservoirs in New Mexico would contain, where the flow is slow and the fall does not exceed, say, 3 feet per mile.

These dams that are contemplated are to be 60 feet high, both the Elephant Butte Dam and the international dam, and they would back the water about 20 miles, making a length of about 18 miles by $2\frac{1}{2}$ miles wide in the case of the international, so it would take, as near as we could measure it, the average flow of the river about a year to fill that dam. The Elephant Butte is not quite so large, but it is a large lake and would require probably the greatest portion of a year to fill it. Then the evaporation from these two lakes would be so great that there would not be left water enough to pass from the Elephant Butte—to pass probably a drop down in some particularly dry years—to the El Paso Dam.

The CHAIRMAN. In other words, then, General, the Elephant Butte Dam would absorb all the water above it?

General MILLS. Yes, sir; in very dry years.

The CHAIRMAN. And leave nothing for below?

General MILLS. That is correct, except in high-flood years. As I have said in this letter, to which you called my attention, dated June 4 last, this seems to be nothing more than right and just according to all riparian laws, and would not be necessary in the ordinary law, but where it has reference to treaty obligations it seems to be necessary to protect Mexico in her right, as she has no standing in our courts.

The CHAIRMAN. What is the legal status of this case, as you understand it? Has it ever been in the courts?

General MILLS. No. Do you want to know the legal status of the relations of Mexico to the Elephant Butte Dam?

The CHAIRMAN. Yes, sir.

General MILLS. After I made my report to Mr. Olney, Secretary of State, he called me to him and asked me many questions on the report, and told me that Mexico had refused to accept the international dam unless some restraint could be placed upon the use of water above, and I told him I thought Mexico was right in that matter. He then avowed his intention to bring an injunction suit against the Elephant Butte project, and he did so; and later on I was directed by the State Department, and also the Department of Justice, to make further investigations as to the flow of water to determine whether the taking of this large body of water by the Elephant Butte or other dams would interfere with navigation below; and we are still occupied in making some investigations in that matter. The case, I understand, was tried first in New Mexico, in the court of first instance, and afterwards in the court of appeals, and later it was appealed to the Supreme Court of the United States and remanded for some irregularity, and has now been retried in those two courts in New Mexico, and is before the Supreme Court.

Mr. BURLESON. That is a suit involving the construction of the Elephant Butte Dam?

General MILLS. Yes, sir.

Mr. BURLESON. To enjoin its construction?

General MILLS. Yes, sir.

The CHAIRMAN. Has there been any litigation in the State or Territorial courts?

General MILLS. None that I know of.

The CHAIRMAN. And this is the only case that has appeared in the United States?

General MILLS. So far as I know.

Mr. BURLESON. And that is a suit instituted by the Attorney-General of the United States against the Elephant Butte Company?

General MILLS. Yes, sir.

The CHAIRMAN. Would this storage of water by the Elephant Butte Dam be more than necessary for the people of New Mexico?

General MILLS. There comes a question. There is no necessity for water at present near the location of the Elephant Butte Dam because there are no prior appropriations or settlements to speak of. All the necessity is in prospective settlements. It is true that they allege they will carry the water down to the Mesilla and El Paso valleys, and according to their map and prospectus, which I here submit (see page 4, Senate Doc. 229, Fifty-fifth Congress, second session), they propose to furnish Mexico with all the water she wants.

Mr. STEPHENS. Would there be much more than heretofore used in the Mesilla Valley? Would not that supply much more than the Mesilla Valley? In the prospectus they propose to build this enormous dam, and they estimate it will flood 800,000 acres, and they will have to go up on the high mesa, which is probably 50 or 75 to 200 feet above the valley. I do not think there is any objection to their having water as heretofore, the same as we have been using it in Texas and Mexico; but we do object to their going up on that high mesa and covering hundreds of thousands of acres of lands that have never heretofore been irrigated, depriving us of what we have been using. Only the most available spots of the low valley before have been irrigated; but this project proposes in the prospectus—and I learn it from conversation with the men who have it in charge—to raise this dam 60 feet high and to throw out enormous ditches so as to go up on these mesas and put in 160,000 acres additional.

General MILLS. I was not through with my answer to the question. Here is the important point. I stated that there were no settlements there to supply. A hundred miles below is the Mesilla Valley, where there are considerable settlements, but not to compare with the settlements in the El Paso Valley; but I have never known a dam reservoir to supply water so far away as this Mesilla Valley, and there is no instance in the United States, and I do not know of any in the world, where they carry water by ditch over 100 miles. So I do not think it would be feasible to supply water for the Mesilla Valley from the Elephant Butte Dam.

Mr. STEPHENS. Is it not also the fact that the heat is so great and the atmosphere is such, causing such evaporation, and the nature of the soil is such that it would be impossible to run water through that soil?

Mr. BURLESON. In a small channel?

Mr. STEPHENS. Yes.

General MILLS. Yes; that is another thing. I should explain the difficulties there of carrying water are perhaps greater than anywhere else in the world. The soil is loose, and there are many ravines, where frequent floods would destroy the aqueducts. It would cost, in the first place, an enormous amount to build a canal, and then the water would be absorbed and evaporated.

The CHAIRMAN. With the present situation there, is there plenty of water to irrigate the land throughout that section?

General MILLS. Oh, no, sir. I will state that when I lived in El Paso, forty years ago, there was hardly ever a scarcity of water; about once in from seven to ten years there would be a dry season and some scarcity of water. Now every year is dry. Last year for fully eight months there was no water passed by El Paso, and the whole region is a desolation. The farms are abandoned; the trees a hundred years old—pear trees a hundred years old—are dying for want of water; all the vineyards are dead, and young orchards are dying. This has been going on about fifteen years, from year to year increasing, to the great distress of the people.

Mr. BURLESON. Did I understand you to say that if the Elephant Butte Dam was constructed it would store all the water and there would be no water to supply the El Paso Dam?

General MILLS. Well, I will qualify that by saying that some years, in flood years, there might be more water than they needed, but on the average they would probably—if they opened up new farms in that region—take all the water that the dam would conserve, taking into account the enormous evaporation from the surface of the lake, so that probably three years out of five the people below would not have water to irrigate their farms, and it would render it impossible for them to prosper.

Mr. BURLESON. Then, if this suit that has been instituted to enjoin the construction of the Elephant Butte Dam should fail—if the judgment of the court is that the Elephant Butte Construction Company can complete that dam—it would be useless to construct the El Paso Dam?

General MILLS. Yes, sir; I have so recommended. I have recommended repeatedly that unless some restraint can be placed on this Elephant Butte Dam, as well as any others that may be contemplated hereafter, to prevent them from using the water which the people below have a right to by prior appropriation——

Mr. BURLESON. Do you subscribe to that?

Mr. STEPHENS. No; the point is we want this legislative act to restrain them, in the event the Supreme Court should hold that they had a right to build that enormous reservoir, so we will be protected hereafter.

The CHAIRMAN. I have understood it so; that this bill is to remove that without waiting for a decision of the court.

Mr. STEPHENS. Certainly, in any event. We want the water equitably distributed; we do not take away from them any water that they have had a prior right to, and we are asking the same right for ourselves. We do not want them to impound the entire amount of water, as they propose, and sell it to the people below.

The CHAIRMAN. I would like to ask another question with reference to the water. You claim, of course, that you are entitled to a certain percentage of the water above this Elephant Butte Dam——

Mr. STEPHENS. Yes, sir.

Mr. BURLESON. Not a percentage, but a quantity.

The CHAIRMAN. Well, a quantity—either one. I find here in the hearing that the New Mexican people object also to the impounding of the water in Colorado, and that they are suffering a hardship by reason

of the water being impounded, and desire to be protected against that. You made the statement some time ago that Colorado being a State it was not thought feasible to do anything that would interfere—

General MILLS. And the additional statement that it was not practicable for them to impound such vast bodies of water, because the fall there is so great that a dam would have to be so high it would be impracticable to impound any great amount of water. But here is a point I would like to mention to illustrate the want of reason in this Elephant Butte Dam claiming all the flow. If you ask them, Suppose a company would organize to build a dam 100 miles above their own in New Mexico and would take all the water, would you admit the right? That would place them in the same position. If that were done this company, of course, could not live.

Mr. STEPHENS. There is quite a watershed, is there not, in the northern part of New Mexico, that comes down past the middle and central portion of the Territory, but rises in New Mexico and does not touch Colorado?

General MILLS. Yes, sir; but it is only about one-fourth of that in Colorado.

Mr. STEPHENS. Does not supply more than one-fourth the amount of the natural flow of water.

The CHAIRMAN. I see here that Mr. Ferguson, who was a Delegate in the Fifty-fifth Congress, was here at the last hearing on this subject. I asked the same question that I asked you about Colorado, and he said it is because we are supposed to be helpless as a Territory without any Representative in the House or Senate, while Colorado has two strong Representatives in each.

(At this point Mr. J. H. McGowan, representing the Elephant Butte Company, appeared before the committee.)

Mr. STEPHENS. The question will be arising, I think, in the courts. Kansas is making some complaint against Colorado on the Platte River, and also in regard to the Arkansas River.

General MILLS. I see a suit is to be instituted by Kansas against the Colorado people for impounding the waters of the Arkansas River.

Mr. STEPHENS. The same question will then come up.

This bill, if passed, I understand, will prevent New Mexico from appropriating waters of tributary streams, would it not?

Mr. STEPHENS. It will not close down the Rio Grande River. All we ask is that they be permitted to use the water they have heretofore used and we be permitted to use the water we have heretofore used, and they shall not be permitted to use all of it.

General MILLS. The matter was referred to me and I was asked for an opinion, and I said that there was no objection to their building all the dams they chose, provided they took the hazard of allowing the water that had been previously appropriated to flow to those who had a right to it. There is no objection whatever to building all the dams they want either on the main river or on tributaries, but they must let pass so much water as was previously appropriated by those below.

Mr. BURLESON. What per cent, then, would they store for their own use, if they permitted the quantity to pass that they had heretofore used, as compared with the volume of the river—what per cent in the dry season?

Mr. STEPHENS. That is the point we make, that we want them to have enough to irrigate—as much as they had before.

Mr. BURLESON. But suppose they dam the Rio Grande River and permit the quantity that had heretofore been used in the El Paso Valley to pass, what quantity or per cent would they leave for their own use?

General MILLS. I can answer that. We made an investigation into that. On page 94 of Senate Doc. No. 229, Fifty-fifth Congress, second session, you will find that we found there had been irrigated in the El Paso Valley on both sides—mostly, however, in Mexico—40,000 acres of land, and that the ditches to irrigate that carried an aggregate of 500 second-feet for the irrigating season, about one hundred days. So that I would recommend the bill to be changed so as to annually require them to allow 500 second-feet to pass to the El Paso Valley for one hundred days, if they want to bring it down to an absolute fixed quantity.

Mr. BURLESON. That still does not answer the question. If they store the water in New Mexico by damming the tributary streams or the Rio Grande River and permit 500 second-feet to flow for one hundred days, what quantity of water will it leave them in New Mexico?

General MILLS. That would depend on each year's flow. I guess we have to go into a good deal of figuring to get that; we could approximate it on a general average of years in the past. We have found the annual flow—it is a very long report and I do not know whether I can turn to it.

The CHAIRMAN. I have it.

Mr. BURLESON. They are entitled, as I understand—you say in the Mesilla Valley they are irrigating 20,000 acres of land, or something like that?

General MILLS. Yes, sir.

Mr. BURLESON. They are entitled to a sufficient quantity of water to irrigate that in the Mesilla Valley before it comes to you?

General MILLS. Yes, sir.

Mr. BURLESON. And if they exhausted a full supply to irrigate the 20,000 in some particularly dry season they would be entitled to take it, because they are above you?

General MILLS. Well, I do not know that that follows.

Mr. STEPHENS. I think it ought to be divided equitably; that is the object of the bill.

Mr. BURLESON. Then I was mistaken.

The CHAIRMAN. Your proposition to give a definite amount would be met here by a report from Captain Derby: "It is evidently apparent that no dependence can be placed on the river continuing to supply the water from year to year, unless some steps be taken for the future construction of reservoirs," etc. So you might not get enough water.

General MILLS. He had in contemplation this Elephant Butte Dam—storing the water year by year; excessive flood years to supply loss of excessive drought years—that is the very remedy he wants made. He joined us in this recommendation that some restraint may be made, because no reliance can be had on there being sufficient water unless this restraint is placed there.

The CHAIRMAN. Now, how many acres have been burned?

Mr. STEPHENS. I think practically all of it.

General MILLS. About 40,000 acres.

The CHAIRMAN. Forty thousand acres in the El Paso Valley?

General MILLS. Yes, sir.

The CHAIRMAN. On this side of the river?

General MILLS. I think about two-thirds is on the other side; probably nearly 30,000 acres on the Mexican side and 12,000 acres, say, on this side.

The CHAIRMAN. Have those lands been deserted?

General MILLS. Yes, sir.

Mr. STEPHENS. There are very few people on either side of the river now.

The CHAIRMAN. And would water—that is, the natural flow of the Rio Grande and its tributaries, if they got there—

General MILLS. If it was restored to what it was before, they would have plenty of water for the 40,000 acres.

Mr. STEPHENS. To restore it to its former prosperity.

The CHAIRMAN. What is the claim of Mexico?

General MILLS. It is in Mexican money, and I think it runs very high—up to \$20,000,000 or \$25,000,000.

Mr. BURLESON. Twenty-million dollars in Mexican money, as I understand it.

The CHAIRMAN. What do they base their claim on?

General MILLS. I never read it. When the Secretary of State referred the matter to me he simply said that there was a claim, and I have never seen it; but I understand it is based on what I have stated, that they formerly had the use of a certain amount of water, and by reason of the settlement of Colorado and New Mexico and the taking out of certain ditches that they had been deprived of this water to a certain extent in long years—about fifteen years.

STATEMENT OF MR. M. WEBER, OF CIUDAD JUAREZ, MEXICO.

The bill pending before the House (H. R. 9710), called the Stephens bill, is to restore to the citizens of Mexico and Texas, in the Rio Grande Valley, the water which has been wrongfully taken from them by its increased use in Colorado and New Mexico.

Ciudad Juarez, or Paso del Norte, as it was formerly called, is one of the oldest cities founded on this continent by the Spaniards, and as the Spaniards colonized from south to north, Paso del Norte is many years older than any of the New Mexican towns, and consequently the people of Paso del Norte have used the water of the Rio Grande for irrigation earlier than New Mexico, and, as the first in use is the first in right, Paso del Norte has unquestionably the best right to the water of the Rio Grande.

The population of Paso del Norte and the valley below increased gradually until there were in the year 1875 about 20,000 people, which have made their living by agriculture for centuries. They exported their surplus products, and it is a well-known fact that they supplied the United States army, stationed at New Mexican and western Texas posts, with wheat for many years in former times.

After 1885 the population of Paso del Norte commenced to dwindle, and as said population found that to gain a living by agriculture grew more difficult year by year, they were forced finally to abandon their homes and emigrate to the United States to make their living somewhere else. The actual population to-day is about 5,000 inhabitants,

a remnant of the 20,000. The farms on both the Mexican and Texas sides of the Rio Grande Valley have been abandoned and have become nearly worthless, and while that country was famous for centuries for producing the finest grapes in the southern part of this country, the vineyards are now totally destroyed and produce hardly enough for local consumption.

As an example of the shrinkage of values of farming property in that section it may be stated that a property belonging formerly to Mr. Augerstein, which was valued by experts at \$400,000, would not to-day produce \$50,000. Another property which belonged to Dr. Alexander, a former United States Army surgeon, which had on it about 40,000 grape vines and was estimated at from \$20,000 to \$25,000, can not be sold to-day for \$6,000 Mexican money. The property of Ciudad Jaurez has depreciated in value, without any exception, from 50 to 80 per cent.

In the Paso del Norte Valley there were formerly, before 1850, about 50,000 acres under cultivation, of which 40,000 were on the Mexican side. Figuring that an acre produces only \$50 Mexican money per year, this would make the annual loss to Mexico \$2,000,000, and as this condition has existed more or less since 1880 it can easily be approximated that the loss to the Mexican citizens during the last twenty years has been fully \$40,000,000. The crops have been lost almost every year.

The same condition exists in the valley on the Texas side. The rural population is completely ruined, and people who were well to do formerly are now forced to a living by doing work on the railroad for \$1 and \$1.50 per day.

The cause of this trouble dates back to the year 1875. After the State of Colorado was admitted to the Union it passed a law authorizing the appropriation of the water of streams, and in consequence of that law the citizens of Colorado appropriated all the water, regardless of the rights of others below at Paso del Norte and Texas who had used the water for centuries. In the State of Colorado there were constructed from 1873 to 1885 nearly 1,000 irrigating canals, appropriating almost the entire flow of the river, to the detriment of the older users. By this wrongdoing the citizens of Colorado accumulated in a very short time an unusual amount of wealth. The inhabitants of the St. Louis Valley, Colorado, alone, who irrigate exclusively with the waters of the Rio Grande, harvest annually a crop of several million dollars, and the increased crop they are harvesting is in about the same decreased proportion for which the people of Paso del Norte, Mexico, and in the El Paso Valley have been suffering.

When the United States acquired from Mexico, under the treaty of Guadalupe Hidalgo, the various Territories, they contained about 60,000 inhabitants, and in 1890 Colorado alone had nearly one-half a million inhabitants, and this population would not have been able to locate so quickly had it not been for the irrigation furnished by the waters of the Rio Grande, which were wrongfully appropriated.

Not only the people of Colorado gained by using the water of the Rio Grande, but likewise the United States Government and the State government of Colorado, both governments having sold several million acres of land, which yielded to the National Treasury and the treasury of the State of Colorado millions of dollars, and nobody would have acquired those lands had it not been for the purpose of irrigating

the same with the water which belonged legally to the Texas and Mexican citizens.

There has been some unfavorable comment about the Stephens bill in New Mexico, it being stated that New Mexico would suffer an injustice should it pass. When New Mexico came into the Union it only had 15,000 inhabitants, and since that time, as Governor Otero has stated before the Senate Committee on Foreign Relations, the population has increased to 200,000 inhabitants, and as a matter of course the increased population has also increased the use of water in that Territory. The Stephens bill does not prohibit the New Mexicans from taking water, but merely prevents them from using water to which "others have right by prior appropriation."

This bill does neither interfere with the present condition of New Mexico nor does it prohibit the New Mexicans from further cultivating their farms and fields. It is true what Governor Otero said before the same committee in regard to the treaty of Guadalupe Hidalgo, that the same guarantees to the citizens of New Mexico their property rights as they existed on May 30, 1848, but the present population of 200,000 uses a great deal more water than the 12,000 used in 1848. The same treaty guarantees to the citizens of the Republic of Mexico and citizens of Texas the same rights they enjoyed in 1848, but so far as water is concerned the citizens in Colorado and New Mexico have deprived them of their right, and this is the reason the citizens of Mexico and Texas make reclamation.

Negotiations for the equitable distribution of the waters of the Rio Grande have been going on between the Governments of the United States and Mexico since 1889, and every Secretary of State from that time until now has favored a settlement of that matter, and when finally the construction of the international dam as an indemnity by the United States was proposed the same has been considered as the only remedy to solve that great and most perplexing problem.

If the Stephens bill passes, it will liquidate in a friendly way the damages, amounting to many millions of dollars, which the citizens of Paso del Norte and Texas have sustained, and it will give Colorado and New Mexico a good title to the water for irrigation, which they have been illegally using for the last twenty-five years.

MAX WEBER.

WASHINGTON, D. C., *February 6, 1901.*

Memorandum presented to the Congressional Subcommittee on Foreign Affairs, in re H. R. 9710, by Max Weber, of Ciudad Juarez, Mexico.

In compliance with the request made by Mr. Albert S. Burleson, of the subcommittee, to present a brief covering the statement made in my allegation of to-day that the Spaniards colonized from south to north, I have the honor to state that I have found a book entitled *A Short History of Mexico*, by Arthur Howard Noll, published by A. C. McClurg & Co., Chicago, 1890, which shows, on pages 108 and 109, the following:

Antonio Espejo went to the rescue of the good friar Ruiz, who had fallen into the power of unfriendly natives, and visited Zuni and Moqui, but meeting with a large number of warriors while on his way to Tiguex or Tigua (now Santa Fe) he had

retired to the Pecos and Concho valleys. In 1585 Humana's expedition resulted in the settlement of Paso del Norte. In 1595 Juan de Onate founded a colony near the junction of the Chama and Rio Grande, and about the same time Santa Fe was settled by the Europeans. It had been an Indian pueblo of some importance.

Velasco II was succeeded by Don Gaspar de Zuniga y Acevedo, Comde de Monterey, and his administration extended into the seventeenth century. He pushed forward the explorations and colonizations begun by his predecessors. He sent an expedition, under Sebastian Vizcayno, along the Pacific coast in 1596, and another in 1602, which reached a point two degrees north of Cape Mendocino, on the coast of California.

From this it will be seen that Paso del Norte was founded ten years earlier than Santa Fe.

On page 387, Volume IX, of the Century Dictionary and Cyclopedia will be found the following:

Fernandez de la Cueva Henriquez Francisco. Duke of Albuquerque, Viceroy of Mexico, Nov. 27, 1702, to Jan. 15, 1711. The town of Albuquerque, New Mexico, founded at this time, was named in his honor.

The farmers in the El Paso Valley of the Rio Grande have waited patiently for more than twenty-five years to have their water rights restored; and as both Governments have now found a remedy for the evil, the citizens of both Mexico and Texas have sufficient faith in the broadmindedness of the members of the United States Congress that they will sustain the action of the various Secretaries of State and pass the Stephens bill.

Not only the United States Government, but also that of Mexico, has employed for many years joint commissioners and spent large sums of money to investigate the situation and the complaints which have arisen therefrom, and as no authority has been heard yet disputing the rights of Mexico and Texas, there should be no objection to the passage of the bill. Said bill neither grants a special favor to a locality nor does it take something away from others. It merely restores, artificially, property rights which nature had given and which were wrongfully destroyed in the course of time by the citizens of Colorado and New Mexico.

That the complaint is old and the present situation foretold may be seen by the following extract from a report relating to troubles on the Rio Grande, transmitted to the House of Representatives by the Secretary of War in 1878 (see Ex. Doc. No. 84, Forty-fifth Congress, second session). Colonel Hatch says:

One (trouble) which must be looked for sooner or later is in connection with the water taken from the Rio Grande for irrigation. As soon as the attempt is made to largely extend cultivation in this valley (there will not be enough water for all, and both sides have an equal right) troubles are certain to arise sooner or later which may involve the two countries seriously.

In the report of the board of officers (see Ex. Doc. No. 93, Forty-fifth Congress, second session) March 16, 1878, is to be found the following statement:

The Rio Grande, at this season of the year even an insignificant stream, its channel often shifting and always erratic, but during the heat of summer sometimes dry, affords, by being directed into acequias on either bank, a scanty and variable supply of water to the people of both nationalities, but is utterly insufficient to irrigate this extensive valley, where the yearly rainfall measures but a few inches. As time progresses and the country is opened to accessions to its population, sure to come—for it is a most fertile region and gloriously rewards the labor spent in irrigation—the question must grow in importance, and may occasion trouble beyond the reach of diplomacy to settle.

General Stanley, commanding the Department of Texas, in his official report, dated September 12, 1889 (see report of General Schofield to Secretary of War, 1889, p. 100), says:

Our relations with our Mexican neighbors upon the long line of the Rio Grande have been kindly, although they are a good deal excited over what they deem the violation of their riparian rights through our people taking all the water of the Rio Grande for the irrigation of the San Luis Valley, which leaves the Rio Grande a dry bed for 500 miles. The question is one that must be settled by the State Department, and thus far there has been no call for military force. The remedy for this water famine and consequent ruin to the inhabitants of the Rio Grande Valley must be found in storage reservoirs, so easy of construction, one in the canyon opposite Taos and the other in the canyon near and north of El Paso.

Up to the present time no serious acts of violence have been committed, as every inspired citizen has expected with the fullest confidence justice from the United States Government; but should the same do nothing, nobody can tell what despairing people will do who have been systematically deprived of their rights and had to witness the destruction of their property.

The only objection so far known against the passage of the Stephens bill is the protest made by the Elephant Butte Company, but it is possible that said company can come before the Government, pretend the final destruction of the small remaining part of the vested rights which the citizens of Mexico and Texas still enjoy for the benefit of mostly English stockholders, who want to create a monopoly and trample upon the sacred rights which the Mexican and Texan citizens have enjoyed for centuries. Can Congress entertain such a pretension for a moment?

Now, let us examine the original rights of that company. In the year 1889 Gen. Anson Mills was ordered by the Secretary of State to investigate the feasibility of the construction of an international dam near El Paso, Tex.; upon the execution of which the two Governments could not agree, however, Mexico alleging the illegality of interrupting the flow of a navigable stream. In 1893, four years later, several merchants of El Paso, of whom none had either farming interests or water rights, formed a company under the laws of New Mexico and obtained, under pretenses, the plans from General Mills which had been made by the General for the Department of State. The company, called the Rio Grande Irrigation and Land Company, applied thereafter for a permit under the act of March 3, 1891, which law authorizes the construction of dams and canals on public lands only, without giving any right to water, and the permit obtained by that company reads, "Approved, subject to any valid existing rights. Hoke Smith." Article 18 of said act of March 3, 1891, states explicitly that nothing shall be construed to interfere with the control of water for irrigation and other purposes under authority of the respective States or Territories, and as the company's efforts to acquire water rights in Las Cruces, Dona Ana, and Mesilla have been futile, the permit of the company is, in so far as the storage of water is concerned, of very little or no value. (Read article 18.)

In other senses the permit of said Rio Grande Irrigation and Land Company is likewise of no value, as the construction of a reservoir in the Rio Grande must be authorized by an act of Congress, and as the company has failed to perfect the right by not getting said act the permit is equally imperfect. (See Senate Report No. 1755, Fifty-sixth Congress, second session, p. 7.) (Read article.)

As to the navigability of the Rio Grande, the same has been duly

established by the United States Government, as it sent Captain Love in the *Ocean Bird* to examine the navigability of the river, and who went as far as Brooks Falls (near Devils River); and as the navigation is the common and joint property of the powers who signed the treaty of Guadalupe Hidalgo, the navigability remains, of course, as long as the treaty powers do not decide otherwise, notwithstanding the fact that navigation is impaired by the diversion of water in Colorado and New Mexico.

That the United States Government has recognized that Mexico has perfect rights both by law and equity to the waters of the Rio Grande is demonstrated by the fact that the Secretary of the Interior has suspended on the 5th of December, 1896, the operation of the law of March 3, 1891, under which the Rio Grande Irrigation and Land Company obtained its permit to occupy public lands (see Senate Ex. Doc. No. 229, Fifty-fifth Congress, second session, p. 18), and as said suspension is in effect yet there is resulting a retardment of the progress and development of the entire arid West, and that section will continue to suffer until our measure, which has caused the suspension, is disposed of; and as soon as the United States Government has settled the barring international question in regard to a satisfactory supply of water for irrigation to Mexico it will undoubtedly come to the rescue of those suffering now elsewhere and settle the national irrigation problem by which millions of families will be benefited, and who will add billions of dollars to the national wealth.

MAX WEBER.

WASHINGTON, D. C., *February 11, 1901.*

[Extract from treaty of Guadalupe Hidalgo, February 2, 1848.]

ARTICLE VIII.

Mexicans now established in territories previously belonging to Mexico, and which remain for the future within the limits of the United States, as defined by the present treaty, shall be free to continue where they now reside, or to remove at any time to the Mexican Republic, retaining the property which they possess in the said territories, or disposing thereof, and removing the proceeds wherever they please, without their being subjected on this account to any contribution, tax, or charge whatever.

Those who shall prefer to remain in the said territories may either retain the title and rights of Mexican citizens or acquire those of citizens of the United States. But they shall be under the obligation to make their election within one year from the date of the exchange of ratifications of this treaty, and those who shall remain in the said territory after the expiration of that year, without having declared their intention to retain the character of Mexicans, shall be considered to have elected to become citizens of the United States.

In the said territories property of every kind now belonging to Mexicans not established there shall be inviolably respected. The present owners, the heirs of these, and all Mexicans who may hereafter acquire said property by contract shall enjoy with respect to it guarantees equally ample as if the same belonged to citizens of the United States.

Mr. STEPHENS. How long have you lived there?

Mr. WEBER. Twenty-two years.

Mr. STEPHENS. Have you been in business?

Mr. WEBER. Yes, sir.

Mr. STEPHENS. What business have you been engaged in?

Mr. WEBER. I have been general manager of the Kettleon & Dege-tau Company.

Mr. STEPHENS. They are German merchants?

Mr. WEBER. Yes, sir.

The CHAIRMAN. Where do they do business?

Mr. WEBER. At El Paso.

The CHAIRMAN. What is your business?

Mr. WEBER. General merchandise.

The CHAIRMAN. How far from El Paso is this dam proposed to be constructed?

Mr. STEPHENS. Four miles above.

The CHAIRMAN. How far from El Paso?

Mr. STEPHENS. Four miles above.

The CHAIRMAN. How far is it from the Elephant Butte Dam?

Mr. STEPHENS. One hundred and fifty miles, about; nearly 175 miles.

Mr. MCGOWAN. One hundred and twenty-five miles.

The CHAIRMAN. In a straight line, or by the river?

General MILLS. I think in a direct line.

Mr. MCGOWAN. The river and the direct line are nearly the same.

(Mr. Weber pointed out on the map the locations referred to.)

Mr. BURLESON. What is your authority for the statement that Spanish colonization went from south to north?

Mr. WEBER. I have read a great many books on the subject, and that is what I have learned from them.

Mr. BURLESON. Is it not a fact that Santa Fe was located—

Mr. WEBER. It was located twenty-five years later. The Spaniards came from the center of Mexico.

Mr. BURLESON. I wish you would make me a brief of that. I want you to make a brief of the proposition that Spanish colonization went from south to north, citing the historical references.

The CHAIRMAN. Do I understand now that there is no water at El Paso at certain seasons of the year in the Rio Grande?

Mr. WEBER. Yes, sir.

Mr. STEPHENS. I was out there two or three times last year, and it was not running at all.

General MILLS. I have been there five or six times this year, and for eight months of the past year—that is, 1900—there was no water passed.

The CHAIRMAN. How about Elephant Butte?

General MILLS. That dam has not been constructed yet.

The CHAIRMAN. That dam is not under construction?

Mr. BURLESON. No; they enjoined its construction.

General MILLS. Up to Albuquerque there was no water. The arid region extends from Albuquerque, N. Mex., about 400 miles down to Presidio del Norte, Tex.

Mr. STEPHENS. The controversy, it seems to me, turned largely on what should be done with the flood waters.

Mr. BURLESON. There is another dam that has been constructed in New Mexico; then the dams that have already been constructed in Colorado have impounded the water of the Rio Grande River.

Mr. STEPHENS. Yes; and there is quite a lot of water that flows down through the flood seasons of the spring, both the El Paso and Elephant Butte country. This bill will distribute—

Mr. BURLESON. This bill of yours will not reach the people of Colorado?

Mr. STEPHENS. No; but it will restrain the flood water. If the Elephant Butte people do what they promise to do, there will be no flood water for us; there will be no water that will pass El Paso; consequently our dam will be worthless, according to their reports. So we are objecting to that dam being built unless they will agree to give us our pro rata share of the water.

Mr. BURLESON. The water you have enjoyed before?

Mr. STEPHENS. Yes.

Mr. WEBER. Water we have enjoyed for three hundred years; that right should be sacred, and the Colorado people should be compelled not to use it and New Mexico should be compelled not to use it.

The CHAIRMAN. Where are the watersheds of the Rio Grande River?

Mr. WEBER. In Colorado and New Mexico.

General MILLS. The principal supply for the Rio Grande River comes from Colorado. There is a great snow fall there, which lies in the mountains until spring, and then comes the rain and this melting, which gives us these torrential floods, and that torrential flow it is proposed to hold by these dams for the agricultural season.

The CHAIRMAN. Is there annually a large waste of this flood water?

General MILLS. Yes, sir; it passes on down. This last year there was a slight flood of water.

Mr. STEPHENS. It passes by in a few days, does it not?

General MILLS. I think it was about forty days last year.

Mr. STEPHENS. When the flood water passes away we have none then for the purpose of any irrigation, and all we ask for is the distribution of that flood water, giving the Mexican people theirs and giving us what we are entitled to.

Mr. McGOWAN. You understand, Mr. Chairman, do you not, that the people representing these proposed Elephant Butte dams reverse this whole question and challenge the validity and propriety of the bill on both points?

The CHAIRMAN. It is understood; yes. They have been asked to file a brief, and I have notified them twice. We have been wanting a brief from the Elephant Butte people, or the people of New Mexico.

Mr. BURLESON. Mr. Chairman, do you not think that there ought to be some limitation of time—because, so far as I am concerned, I do not propose to delay indefinitely in order to have the brief filed.

The CHAIRMAN. I think there ought to be some limit; yes.

Mr. McGOWAN. That matter from the delegate did not reach the representative of the Elephant Butte Dam until a very few days ago. Then I communicated with Mr. Smith, the only man I knew on this committee, and through him I got a notice about twenty minutes ago. I should be glad to make a statement if you are ready to hear me.

The CHAIRMAN. We have a statement here, in the form of a hearing, from Mr. Burkhart. Is he from New Mexico?

Mr. BURLESON. Yes, sir.

The CHAIRMAN. And he claims that they had 81,000 acres under cultivation in New Mexico.

Mr. STEPHENS. They may have it, but they haven't it in the Rio Grande Valley.

The CHAIRMAN. They claim that they did; they claim in the Rio Grand Valley.

Mr. STEPHENS. It is not there; not below that Elephant Butte Dam. I have been all over that country myself.

Mr. BURLESON. What is your understanding about the quantity of land in New Mexico above Paso del Norte under cultivation, contiguous to the Rio Grande River?

General MILLS. That is a broad question.

Mr. BURLESON. Well, between Elephant Butte and Paso-del Norte?

General MILLS. There were about 27,100 acres estimated to be under cultivation in 1896, but probably now not more than 12,000 to 14,000 acres.

Mr. BURLESON. That is the maximum amount, is it?

General MILLS. Yes, sir; so far as I know.

The CHAIRMAN. Would you like to be heard now, Mr. McGowan?

Mr. McGowan. Whenever you will hear me.

STATEMENT OF MR. J. H. MCGOWAN.

Mr. Chairman, this matter originated, I think, with complaints made by Mexican citizens that they were not getting their share of the water from the Rio Grande, and they made the complaint on the ground that they were entitled to water under the treaty of Guadalupe Hidalgo and subsequent treaties with this country; that it was in violation of those treaties and our obligations—our treaty obligations to Mexico—that we had taken so much of the water that their ancient ditches were not filled. They made complaints, and those complaints were brought to the attention of the Secretary of State by the Mexican minister, and by the Secretary of State complaints were submitted to the Attorney-General several years ago, and he rendered an elaborate and full opinion, in which he held that the United States was under no obligations by reason of the treaty of Guadalupe Hidalgo or the subsequent treaties or conventions to furnish any water to Mexico that fell upon our soil and was gathered within the jurisdiction of the United States; and I think if any member of this committee will take the treaty of Guadalupe Hidalgo, Article VII, which is the one that is relied upon, and the treaties and conventions subsequent, that modify the treaty somewhat, and will read it through, he will find that there is not a particle of authority anywhere for any Mexican citizen to claim any water of the Rio Grande that has been gathered on American soil. At least that was the deliberate opinion of the Attorney-General.

The Mexicans then made claims for losses and filed these claims with the Secretary of State, until they aggregate now, I believe, about \$35,000,000, by reason of being deprived of the water that they were entitled to for their ancient ditches under the treaty obligation of the United States. The question then—to go hastily to what is material in the discussion of this case—came to be submitted to the courts. These people, those who are represented here and those desiring this international dam, that there might be a distribution of water to Old Mexico and Texas at the expense of New Mexico, induced a suit to be brought against the proposed project of building a dam at Elephant Butte, a distance of 125 miles above El Paso, to impound the flood waters—the torrential waters—that come down there from the melting of the snows in the springtime.

That project was this: Congress, away back in 1861 to 1863, I think, passed an act directly approving and legitimatizing, legalizing the acts of the Western States and Territories in the appropriation of water

for irrigation, meaning the laws of all the Western States, the laws and usages of all the Western States and Territories, I think, without a single exception, which are substantially that first come, first served, in the streams in reference to irrigation mining. The old common law with regard to riparian rights is not applicable to the conditions found out West. They had to be modified; and if a small stream was running along that had not been appropriated and it was necessary for the purpose of working a placer mine, for instance, the parties owning the mine under the laws and usages of the Western States and Territories could appropriate that water, a portion of it or the whole of it if it was necessary, could even take it out of the valley in a flume and appropriate it in another valley, so that it never got back into the stream at all. That was legal and that was legalized by the United States in your statutes, 1863.

New Mexico formed exactly such laws when they got possession of the territory—substantially those laws with regard to the use of water when they took possession of the territory from Old Mexico. Under the Kearney Code those laws were adopted, afterwards modified and enlarged by the New Mexico legislature, so that New Mexico now has a code of laws with reference to the appropriation of water which is on the principle “first come, first served.” A man may appropriate the water for his own use where it has not been appropriated by others. If the man above him has appropriated one half and the other half comes unvexed, he may appropriate that half, or he may go above the other man and appropriate any part of the water that does not interfere with the appropriations already made. That is the law with regard to appropriation and with regard to mining, undoubtedly. New Mexico has gone further than that, and provided incorporations may be organized for the very purpose of irrigation—for the purpose of appropriating the water for purposes of irrigation; and Congress has also provided for the establishment of reservoirs for the purpose of irrigation, and you will find by looking on the map before the chairman that there was a reservoir surveyed out just above Elephant Butte and another just below, in pursuance of the laws of the United States reserving these reservoir rights, for the very purpose of impounding this water of the Rio Grande River.

Now, the Rio Grande Dam and Irrigation Company, organized under the statutes of New Mexico for the purpose of building a dam at Elephant Butte, a dam farther down for constructing canals for the purpose of irrigating this valley below them, and furnishing water for the purpose of irrigating the arid lands below. Under the statutes of the United States, after they had organized for that purpose and had filed their articles of incorporation with the proper authorities in New Mexico, they came to the Secretary of the Interior with their maps, plans, and canals laid out, and these were approved by the Secretary of the Interior. They were thus entitled to take all waters out of the Rio Grande River at Elephant Butte and one other place where they proposed to build their dam, that had not already been appropriated, legally were authorized to do that thing, and they set about construction. They have expended about \$150,000 in constructing canals, constructing a wing dam some considerable distance below Elephant Butte for feeding some canals which they have opened, intending to make a large dam and reservoir at Elephant Butte for the purpose of impounding simply the torrential waters, which have heretofore all gone to waste.

For hundreds of years, the whole history of the river, those torrential waters have never been impounded anywhere, have never been saved to anybody; they have never attracted anyone to the wealth of the country in any way; they have simply been wasted. They have rushed down there, as the gentleman has told you, occupying only twenty-five or thirty days out of the three hundred and sixty-five in a year. They have spread out over all that arid ground and have sunk into the ground and have been wasted. They have not contributed even to the little navigation at the mouth of the river, some 800 miles below, the only navigation that there is on the Rio Grande River.

After this Elephant Butte scheme was established, after the organization of this corporation, after its plans had been submitted to the Secretary of the Interior and been approved, and the company had expended, as already stated, about \$150,000 in preparation for the labor and for labor already expended, complaints were made by parties interested in what is now called the international dam at El Paso, asking the Secretary of the Interior to cancel his approval of these maps, asking the Secretary of State to make a new treaty with Mexico by which they would be inhibited from building the dam up there, and allowing these waters to go down so that they might be caught at El Paso in the international dam and one-half of them go into these ancient ditches in Mexico, where the Attorney-General has said that they had no legal right to them, either by reason of the international treaties or legal comity. His opinion is clear and explicit. Taking up these treaties between us and Mexico one after another and examining them, and then examining treaties as to international obligations outside of treaties, he holds that Mexico has no claim upon this Government whatever.

These parties, finding that they were not likely to succeed in that way, induced an injunction suit to be brought against our company under the act of 1891, which places the navigable waters in the keeping of the Secretary of War, to prevent obstructions to navigation. They declared in their bill that they brought in the district court of New Mexico, first, that we were building a dam or proposing to build a dam, in waters that were navigable, declaring that the waters were navigable at Elephant Butte, and thus making the project obnoxious to the statute of 1890, that said that no obstruction should be put into navigable waters. The second item in the bill was that if we did not obstruct navigable waters there—if the court should find that they were not navigable at that point—we interfered with the navigability of the stream below in New Mexico; and if we did not interfere with the stream below in New Mexico, as a navigable stream, if it was held that the stream was not navigable in New Mexico, that, then, we did impede its navigability down at its mouth, where it was confessedly navigable.

It is also stated in the bill or in the amended bill (they filed an amendment to the bill) that it was in violation of treaty obligations of the United States that we proposed to build this dam. That matter went into the courts and was tried, and they were defeated on every point. The court held that the stream was not navigable at Elephant Butte and that it was not navigable at any point in New Mexico. It also held that the construction of the dam at that point would not be a violation of treaty obligations between the two countries, and also held that to impound the torrential waters at that point would not impede navigation at the mouth of the river, some 1,100 miles from Elephant Butte—800 miles and upward below El Paso.

They appealed that case to the supreme court of the Territory of New Mexico. It was tried most thoroughly there, the arguments occupying two or three days altogether, and the supreme court of New Mexico unanimously affirmed the decision below. They then appealed the case to the Supreme Court of the United States, and it was there argued by the representative for the Elephant Butte people and by the Attorney-General, Mr. Griggs. The Supreme Court of the United States held substantially this; and I have to make these statements, because I can not stop to bring the authorities here and had no time, and you probably would not care to have me go over them anyway:

First, that the stream is not navigable in New Mexico at any point, at Elephant Butte or anywhere else; that the stream is only navigable from its mouth upward about 250 or 300 miles at most; that the navigation there consists of a single little vessel, the *Bessie*, which only draws 18 inches of water, and makes her trips every five or six days when the water is sufficient. But the Supreme Court, being charged under the Constitution with the protection of the navigability of navigable waters in the United States, held that if we did construct a dam at Elephant Butte that would materially interfere with the navigability of the river down there, where it was confessedly navigable (that one little vessel making it navigable, it running back and forth over it), we should have our dam so modified that it would not do that, so that it would not "affect materially"—those are the words used, I think—the navigability of the stream where it was navigable, and sent the case back to be tried on that one question of fact: Will the dam, as proposed by the engineer and laid down in the plans of the Elephant Butte Dam scheme, so interfere with navigation down at the mouth of the river as to materially affect the navigability of the water there?

That was the question. The international question, the question of the treaties, were argued before the court and they passed over that without comment, simply affirming whatever had been found below, with the exception of this one question of fact—whether our proposed dam would interfere with the navigability of the river way down there.

The case then went back on that amendment, and was tried in the district court with very great thoroughness, it making a very large record. Investigation was made by these learned engineers above and below, statistics were brought there and laid before the court, and after many days' trial and several days of investigation the court rendered a decree that the construction of the dam would not materially interfere with the navigability of the stream below.

That was then appealed again to the supreme court of the Territory and that court again affirmed the decision of the district court, and that decision is appealed and pending in the Supreme Court of the United States.

So this bill is simply to legislate out a pending lawsuit that is before the Supreme Court. It is a proposition to strike out what we believe to be vested rights, to strike down our Elephant Butte project, which proposes to impound the waters for the benefit of citizens of New Mexico, in order to let those torrential waters go down to El Paso, to impound them there again with a still larger structure and a still bigger reservoir, for the benefit of Texas and old Mexico. Of course water will not run uphill. El Paso is on the southern boundary—as you see on the map—of New Mexico. All the torrential waters that

ran down to El Paso and were impounded there would be of no use whatever to New Mexico; could only be used below that point.

The proposition of this bill, then, is, if it means anything, to take away from the people of New Mexico the use of all the torrential waters and destroy this private enterprise. But this enterprise is a legal enterprise; it had its inception and inauguration under the statutes of New Mexico. Every step that has been taken has been taken legitimately. It has never been challenged that our incorporation was correct, it has never been denied but what the laws of New Mexico authorize us to take the waters for the purpose of irrigation. It simply says that old Mexico, having her ancient ditches down there that were once filled with water from the stream, is now entitled to water again. And for that purpose, and so that we may be on friendly and proper terms with old Mexico under our treaties and obligations to her, an adjoining sister republic, this thing is to be done. Now, that, I understand it, is the legitimate reach which this proposition is after.

Mr. BURLESON. You claim, then, that you have the legal right to deprive these citizens of Mexico of the quantity of water they have heretofore used?

Mr. MCGOWAN. We have the legal right to take the water that is gathered on our watershed and use it for our people, and not for old Mexico.

Mr. BURLESON. What they propose is to pass a statute here that will change the law?

Mr. MCGOWAN. Yes, sir.

Mr. BURLESON. Then you answer back that that would not be right, because you have vested rights in the construction of these canals and the proposed construction of this dam; they answer that it is not morally right for you to take the water that they have heretofore been using.

Mr. MCGOWAN. But they have not been heretofore using it. Don't you see the complication comes here at once; that they have not been using the torrential waters; they have simply been using the run of the stream. Now they want to use the torrential waters by making Uncle Sam expend between two and three million dollars to build a dam and give it to them—

Mr. BURLESON. That is a question of policy with your company. That has nothing at all to do with this. If Congress wants to make an appropriation of the money, of course your corporation has nothing to do with that.

Mr. MCGOWAN. It furnishes the foundation for this bill, and that is what I am after—to meet this bill. Let us see what condition we would be in in New Mexico if this were allowed, if they stopped us from damming these torrential waters in New Mexico. Colorado, as you have heard, has taken the waters of the Upper Rio Grande, so that the ancient ditches to-day in New Mexico are as dry as the ditches in old Mexico. So that between the two, between Colorado on the north—and that is a sovereign State and you can not cross the line and interfere, and this bill does not undertake to, as I understand, does not undertake to reach into Colorado and stop them, but simply because you have a jurisdiction over a Territory the proposition is to deal with New Mexico. But New Mexico, being between the devil and the deep sea—maybe I ought not to use that expression—but being between old Mexico and Colorado, Colorado stopping the water up

there, and Mexico getting the benefit of the water our dam will conserve, leaves the people of New Mexico without water, leaves them completely dry, and people have moved away because of that. The only water left now for New Mexico to irrigate her vast territory of arid land—some of the most beautiful land in the world, they tell me—is the torrential water that nobody has ever appropriated. We propose to appropriate it; we laid the foundation to do it, and raised the money, and now it is proposed to stop that.

Mr. STEPHENS. You propose to appropriate all of it.

Mr. MCGOWAN. All the torrential waters that have not been heretofore appropriated.

Mr. STEPHENS. Then what will we in Mexico and Texas do?

Mr. MCGOWAN. You have never appropriated any up to this time. Under every arid State law the law allows the first comer to appropriate the water.

Mr. STEPHENS. Taking your proposition, then, suppose some corporation should go above you 50 miles and put in a dam and cut off the water from you?

Mr. MCGOWAN. The laws of New Mexico would not allow them to do it.

Mr. STEPHENS. Then you are protected by a law, but you do not want any law to protect us?

Mr. BURLESON. What law is there to protect you from that?

Mr. MCGOWAN. The law says any amount of water necessary for your use, unless you interfere with some former appropriators.

Mr. BURLESON. These are old appropriators.

Mr. MCGOWAN. But they lost their rights when they lost their territory.

Mr. BURLESON. When they lost their country?

Mr. MCGOWAN. When they lost their country.

Mr. BURLESON. Then you claim that you have the legal right to appropriate the water there, do you not?

Mr. MCGOWAN. Certainly.

Mr. BURLESON. Now, then, they propose by this law to change that legal right; and you answer, "But that would not be right."

Mr. MCGOWAN. It would not be legally or morally right.

Mr. BURLESON. You answer that it would not be morally right?

Mr. MCGOWAN. Yes, sir.

Mr. BURLESON. They say to you it is not morally right for you to take the water they have been using for three hundred years; and so it comes down to a question of moral right, after all.

Mr. MCGOWAN. Not quite; no, sir.

The CHAIRMAN. You claim the right to build the Elephant Butte Dam to gather in these flood waters because there has been no dam or project before this to gather in the flood waters?

Mr. MCGOWAN. That is right.

The CHAIRMAN. You do not claim prior right to the natural flowage?

Mr. MCGOWAN. Not a bit.

The CHAIRMAN. That is your position, is it?

Mr. MCGOWAN. Yes, sir.

The CHAIRMAN. I want to have that made clear.

General MILLS. Ask him whether there was not a project for an international dam which was projected three years before his, and whether his project was not copied after the international project.

The CHAIRMAN. General Mills wants to know if there was not an

international dam projected before yours, and whether yours was not copied after it?

Mr. MCGOWAN. The international dam was never projected, so far as I know, except upon a concurrent resolution of Congress. That is the first I know anything about it. There certainly was never any appropriation of the water for any international dam through legal proceedings.

General MILLS. There was a resolution of Congress, and I made the investigation in 1889, expending some \$6,000 Government funds on survey, plans, and specifications for dam and reservoir; and I will state for the information of the committee that Mr. Campbell, their engineer, came into my office and, without giving his purpose, took from me the details of the proposed international dam, and in their prospectus they state that their estimates and plans were based on my estimates and plans for the international dam. (See par. 8, p. 7, Senate Doc. No. 229, Fifty-fifth Congress, second session.) Their right of way was not granted by the Department of the Interior until February 1, 1895, and then only subject to valid existing rights. (See p. 4, Senate Doc. No. 229, Fifty-fifth Congress, second session.)

Mr. BURLESON. I would like to ask you a question. You say, in reply to the chairman, that you have the right to store the torrential water. Do you propose to permit the water that has been used in the El Paso Valley for three hundred years to flow by that dam?

Mr. MCGOWAN. Will you allow me to answer the question which was not answered by me, but answered by General Mills. And I do not want that answer to stand unchallenged. There was no project for an international dam that had so far ripened that rights attached when we got our incorporation under the New Mexico law and our permit to build the dam, and our rights attached only when we got our plans and specifications and maps approved by the General Government, and there was none such in existence. The first I know of, and I think it is the first project that has received anything like formal recognition, was under the resolution of 1890.

Mr. STEPHENS. You knew that the people of Texas and Mexico intended to appropriate that water by means of an international dam, did you not, and you went above them with the view of cutting it off?

Mr. MCGOWAN. No, sir; not for the purpose of that.

Mr. STEPHENS. Does it not do it?

Mr. MCGOWAN. Certainly; it stops the torrential waters; we appropriate them. The position is just this—

General MILLS. I have some documentary evidence to read in contravention of what Mr. McGowan has stated about the rights of Mexico on that point.

Mr. MCGOWAN. Under the treaties?

General MILLS. Yes. I do not want to unnecessarily interrupt him.

The CHAIRMAN. Please wait until he has completed his statement.

Mr. MCGOWAN. In 1890, April 29, Congress passed a concurrent resolution, which was the first notification we had, or I guess anybody had, of any international dam scheme, and this is the resolution:

Concurrent resolution concerning the irrigation of arid lands on the Rio Grande River and the construction of a dam at or near El Paso, Tex., for the storage of its waste waters, and for other purposes.

That is the title. The resolution is too long to detain you, but I want to tell you dogmatically that that is the only suggestion of an

international dam in the title. There is not a thing in the preamble or the resolution itself that provides for an international dam, except in the title, and that is all the notification that was ever given, so far as I know, public or private, with regard to an international dam, until our scheme was projected. The resolution is there and is easily read by the members of the committee.

It makes no difference, Mr. Chairman, legally speaking, if we did the work legitimately and followed the law of the Territory or the law of the United States. Nobody has charged us, so far as I know, with fraud in the matter in any way. It was done openly and aboveboard. We organized our company under the laws of New Mexico, and we got the authority. We declared in our articles of organization that it was our purpose to build a dam at or near Elephant Butte for the purpose of impounding the torrential waters there for the purpose of irrigating the valley below. We declared that in our declaration, and that is on file, and then got a permit to build the dam to take the water, and then we brought on, openly and aboveboard, our maps and plans, and they were approved by the Secretary of the Interior. Now, supposing somebody else had a scheme by which they proposed to take the water out below, that scheme not having matured, not having attached in any way under the statute, how would it affect us? Suppose two individual men have mines on a stream running through Colorado or New Mexico or any of those western Territories that provide for the use of the water in this way; suppose both of them had plans in their heads and talked with their neighbors and one actually did it before the other one did, he is not obstructed because the other one had such a scheme. Now, that is all there is of this suggestion from General Mills, I understand. There was a question asked that I did not answer.

The CHAIRMAN. No; I do not believe there is anything more to ask.

Mr. WEBER. I am sorry to say that Mr. McGowan made a statement as to the opinion of the Attorney-General—I think it was Mr. Harmon. I read that opinion very carefully, and as Mr. McGowan stated, Mexico has no right, there is no law, there is no equity. I think Mr. McGowan made a mistake in not having read the last line of that opinion in which Attorney-General Harmon said, "This question seems to be a question of comity, and as such it belongs to the State," and upon that I think Mr. Olney, who stands here very high, took this matter up right away from Mexico. Why? Because Mexico—

Mr. MCGOWAN. Is this a question you are asking me?

Mr. WEBER. No. Then it was proposed in 1889, in that year the thing was laid before the Mexican Government. The Mexican Government investigated it and requested two of the leading lawyers, perhaps the most famous lawyers of Mexico, Messrs. Gamboa and Vallarte, to study the question. Both lawyers agreed that Mexico had under the treaty of Guadalupe Hidalgo substantially the full right of navigation, and the United States were forced to protect this right, because the right of navigation from Paso del Norte is a right belonging to two nations, and neither one can destroy that right.

The CHAIRMAN. Let me interrupt you by reading from the opinion of the present Attorney-General:

I have examined the proposed bill and see no objection to it from the point of view which you have indicated.

That refers to what I had said to him in my communication, which he repeats in the first part of his letter as follows:

Whether the bringing forward of this or a similar measure at this time would be inexpedient or likely to cause embarrassment to the Department of Justice in the prosecution of the pending litigation against the corporations who are seeking to construct a dam and reservoir at Elephant Butte.

He says:

I am not sufficiently acquainted with the material facts to be able to give you an opinion upon the general subject of the projected international dam. That enterprise involves so many questions of scientific and engineering knowledge that I do not feel competent to express an opinion upon it. I have no doubt that many persons who have heretofore used the waters of the Rio Grande at points below El Paso for irrigation purposes have been very seriously injured by the storage and diversion of the water by dams, reservoirs, and irrigating canals.

I would point out to you, however, that the sole basis of jurisdiction in the Federal courts, so far as the United States Government is concerned, is interference with the navigable capacity of the stream. The use of the waters of the river for purposes of irrigation is not a use connected with the regulation of commerce, and the act under which the present suit is being maintained against the Rio Grande Dam and Navigation Company is one solely for the protection of commerce.

Very respectfully,

JOHN W. GRIGGS, *Attorney-General.*

Mr. BURLESON. So the Supreme Court can not possibly pass on the question of the rights of these people to use these waters.

Mr. STEPHENS. It is a question for legislation by Congress.

Mr. MCGOWAN. It is true, and undoubtedly true, I might say here, that I was the sole attorney for the Elephant Butte Dam in the discussion of the case before the Supreme Court with the Attorney-General, and that the question with regard to the claim of Old Mexico on the waters of the Rio Grande was one of the principal points discussed, and we discussed it on both sides. The Attorney-General said that, with all due deference, he differed with his predecessor, Mr. Harmon, who rendered that opinion, and he undertook to show from the treaty of Guadalupe Hidalgo, and from the conventions, and from international comity that Old Mexico is entitled to a portion of this water, and I undertook to show to the contrary, and we had our arguments there concerning that.

When the court came to decide that, had that been true, had his contention been correct, it would have disposed of the whole question. On the contrary, the court held, in substance, that our claim was legitimate, only we must not impound the water to such an extent as would impair the navigability of the stream below. That was all. So that, argumentatively at least, the Supreme Court has held that Old Mexico has no claim on the United States by treaty obligations. What we ought to do, probably, is to be very kind to a sister republic in reference to it; but we should not be kind to a sister republic and the citizens of a sister republic to the detriment of our own citizens. In that arid country water is necessary to life, just as air is, and unless we can get the water we can not stay. You take away the water in the north part, by destroying this dam and carrying the torrential waters to El Paso, and you have destroyed the whole arid region of New Mexico.

Mr. STEPHENS. It is also necessary for the people of Texas to have some water.

Mr. MCGOWAN. Texas is not so badly off as New Mexico. Besides, you have to give authority to make a general law as between the States, or else you have got to discriminate unjustly as between the

States. You say yourself this bill does not attempt to go up into Colorado.

Mr. STEPHENS. Will you not admit this will be constitutional?

Mr. MCGOWAN. Yes, sir.

Mr. STEPHENS. And if it equally distributes the water, and is constitutional, what objection have you?

Mr. MCGOWAN. It is not constitutional if it takes away vested rights.

Mr. STEPHENS. Do you object to the equitable distribution of the water?

Mr. MCGOWAN. Only that the first comer can have the water. If there is not enough for the whole, then the first comer should have it.

Mr. STEPHENS. Do you think, as a matter of moral right, that is just?

Mr. MCGOWAN. I have not any doubt about it.

Mr. BURLESON. What do you mean by the first comer?

Mr. MCGOWAN. The first appropriator. He is the one who has the right to it under the law.

Mr. BURLESON. Then if these people appropriated it three hundred years ago you will admit that morally your people are in the wrong?

Mr. STEPHENS. That is correct.

Mr. MCGOWAN. No; because there came in that settlement by war, by which they lost their territory.

Mr. BURLESON. And now Mr. Stephens proposes by a statute to change that, and you answer back that that would not be morally right. Then it comes down to a question of the measure of the moral right?

Mr. MCGOWAN. When they were using that water they were using the water that was gathered in old Mexico, water that fell upon their own country and was gathered there. Now they propose to use water that falls upon our own watershed and is necessary for the sustenance of our own citizens.

Mr. BURLESON. The water they propose to use now falls upon the same watershed that the water fell on three hundred years ago.

Mr. STEPHENS. Is not Texas a part of the United States?

Mr. MCGOWAN. Yes, a good deal.

Mr. STEPHENS. And are not you depriving the United States, then, of water when you propose this?

Mr. MCGOWAN. But they are not any more entitled to the water from New Mexico than New Mexico is entitled to water from Colorado.

Mr. BURLESON. Certainly not; but what do you mean by saying that the first comers have the first right?

Mr. MCGOWAN. The law says so.

Mr. BURLESON. Then if these people came there three hundred years ago, that was before Mexico—

Mr. MCGOWAN. That is outside of our jurisdiction. The law does not say so with regard to old Mexico; it only applies to New Mexico and Texas and Colorado.

Mr. BURLESON. Do you believe that these Mexican citizens should be deprived of their right because they can not come into our courts to sue?

Mr. MCGOWAN. They are not deprived of their right. Before they owned that, and where they propose to get the water now, it belongs to us. We own that water; it falls on our watersheds.

The CHAIRMAN. Do your people intend to take the natural flowage of the water of the Rio Grande?

Mr. MCGOWAN. No, sir; the natural flowage is all appropriated; we do not intend to interfere with it.

The CHAIRMAN. Has that been appropriated above the Elephant Butte project?

Mr. MCGOWAN. Part of it below. We would be subject to injunction; we must let enough of it go to make the natural flow.

The CHAIRMAN. Then your claim is that you are the first to attempt to impound the flood waters?

Mr. MCGOWAN. Absolutely the first that has any legitimate right to impound flood waters, and the first one that started the project to save this water for the benefit of the people.

Mr. WEBER. That is not so.

General MILLS. Oh, no.

The CHAIRMAN. You claim that citizens of Texas, leaving out the question of citizens of Old Mexico, below El Paso made no attempt to use the flood waters?

Mr. MCGOWAN. They have not, so far as I know—not these that run past Elephant Butte. You know that water runs 125 miles before it gets into Texas, and the water spreads out miles and miles wide, and the bottom is quicksand, and it disappears, so that you can walk across it five or six or nine months in the year. There is but little of it that comes down to El Paso after the flood waters have gone. It changes its bed constantly, shifting here and there.

Mr. BURLESON. One question, now, if you please. The citizens of Mexico and Texas at Paso Del Norte for three hundred years used for one hundred days during the agricultural season a certain quantity of this water.

Mr. WEBER. Especially flood waters.

Mr. BURLESON. Do you propose to impound the water they have used for three hundred years during one hundred days of the year?

Mr. MCGOWAN. I am not a New Mexican, but our folks down there say this water was never used for irrigation by anybody.

Mr. BURLESON. If you will pardon me, you do not answer my question. It may be you can not answer it.

Mr. MCGOWAN. It may be I am stupid. Put it to me again.

Mr. BURLESON. This is it: For three hundred years—assuming I am correct in the time—the citizens of Mexico and Texas used, for one hundred days during the agricultural season, a certain quantity of water coming down the Rio Grande River. Do you people in New Mexico propose, by the construction of the Elephant Butte Dam, to impound the water that they used during that one hundred days?

Mr. MCGOWAN. No; this is why—

Mr. BURLESON. Then, as I understand it, you propose, for the one hundred days that they have used a certain quantity of water, to permit that quantity of water to flow by?

Mr. MCGOWAN. Your question assumes that they used the waters that are called torrential waters for irrigation.

Mr. BURLESON. No; I do not say torrential waters; I say for one hundred days during the agricultural season. That fixes a fixed time. I do not care what kind of water comes during that time, whether they are torrential waters or not. As I understand it, for three hundred years, during a certain time, the people of Mexico and Texas have used a certain quantity of water. I do not know what the quantity is. Do you propose by this dam to impound that water during that time?

Mr. MCGOWAN. As a question of fact, it is said by our people down there that we are not impounding an ounce of water that anybody ever used for irrigation purposes; that during the torrential season the water is not used, or usable, for that purpose; that we let it out afterwards when the agricultural season is on, so they can use it. There are 125 miles, probably, between that Elephant Butte Dam and this place, and they do not touch that until it gets down there—125 miles of arid lands lying on either side, and hundreds and thousands of acres on either side. We will not save enough water to irrigate that land, which never was irrigated, only so far as ditches were made that took the water out of the stream without dams; the mouths of the canals standing so they took the water out.

I understand our folks to claim this: That they are not impounding any water that heretofore has been used for agricultural purposes, but saving torrential waters which everybody has allowed to go to waste; and the only use that could be made of it was that if it ran past El Paso and clear on down it aided navigation. We should not take enough of it to impair navigation; that we are bound not to do under the decision of the Supreme Court.

Mr. WEBER. I am sorry that Mr. McGowan is altogether wrongly informed. For the last fifteen years that country has used nothing but torrential waters. The question is, the only water which exists is the flood water, and no other—no other water exists in the Rio Grande; so, consequently, if they allow this 500 feet to pass, there is no water for the Elephant Butte.

Mr. MCGOWAN. Don't you say that the ancient ditches in your country are dry now?

Mr. WEBER. If there was no flood water.

Mr. MCGOWAN. I understood you to say awhile ago that your people had moved away; that that was all dry?

Mr. WEBER. Yes, they have moved away—

Mr. MCGOWAN. And that property once worth \$100 per acre is not now worth \$5?

Mr. WEBER. They are dependent on that flood water; and now they telegraph down away from Albuquerque, and from place to place, when that flood water is coming.

Mr. MCGOWAN. There is no dam yet, and yet you say they have had to move away.

Mr. WEBER. There are sometimes years when there are great floods, and then there is water for everybody, and everybody takes it; and if there are no great floods, there is no water for anybody.

Mr. MCGOWAN. I think that these gentlemen will agree with me that there has been no impounding of water; and you will agree with me also that the officers of the United States—of the Geological Survey—who have been in charge of this matter, have been urging upon Congress to impound this water to save it. There has been no impounding of water to any extent above the north line of Mexico.

The CHAIRMAN. We will now hear from General Mills.

General MILLS. Mr. McGowan has stated that by reason of the peace treaty of Guadalupe Hidalgo Mexico forfeited her right to any of the water. Consequently he proposes that we shall not take her into consideration at all. I have a report which was made to the State Department, from Colonel Engledue, of the British army, and president of the Elephant Butte Company. I will read extracts from it. It was

submitted to the State Department and transmitted to me. I find, first, that Colonel Engledue, who was making a report to the stockholders of his company, stated that these two treaties—the treaty of Guadalupe Hidalgo and the subsequent treaty by which we gained Arizona—the Gadsden—says (Engledue):

Under these two treaties the Republic of Mexico claims to be entitled to joint control of the Rio Grande and sufficient of the waters of the stream for the irrigations of the Mexican farmers' lands on the Mexican side of the river, and has now filed at Washington a formal demand for a large indemnity because of our dam and other works for the appropriation of the waters of the Rio Grande for irrigation purposes in New Mexico, about 50 miles above.

He says Uncle Sam has got in a very embarrassing place and they are going to squeeze him. He says further on:

The Mexican minister has pointed out, in his official demand upon the United States Government, that the city of Juarez on the Mexican side of the Rio Grande, up to the American city of El Paso, has existed for more than three hundred years, during which time many thousand acres of the Mexican side of the river have been irrigated and cultivated; but that the completion of this company's proposed works will almost entirely deprive the Mexican farmers of water. Mexico's claim has placed the United States Government in a very awkward position. The company's titles were legally acquired under the Territorial laws of New Mexico and the Federal laws of the United States, the vendor company's right to impound and appropriate the waters of the Rio Grande having been finally and formally recognized by the late Secretary of the Interior, a member of Mr. Cleveland's Cabinet.

Now he goes on further:

To the contrary, we have reason to believe the United States Government to be the reverse of unfriendly, as, notwithstanding the justice of Mexico's urgent demands in pressing claims, the Attorney-General did not authorize the injunction suit until the beginning of the flood season, when the company's works would have been suspended for the time being in any event, thereby avoiding, as far as possible, unnecessary injury to the company. In the Government's bill against the company Mexico's claim that the Guadalupe Hidalgo and Gadsden treaties had been violated by the United States was conceded, which apparently leaves the United States no option but to indemnify Mexico, or arrange with this company to supply water to the Mexican lands, and it is now proposed that the United States Government should subsidize the company to the extent of \$250,000 (£50,000) a year for twenty years in consideration of the company supplying the Mexican farmers on the Mexican side of the river with sufficient water for the irrigation of their lands (the Mexican farmers paying the company an annual water rental of 6 shillings per acre), thereby making good the United States' obligation under her treaties with Mexico. As Mexico has now raised her claim against the United States to \$25,000,000 it may be safely assumed that the authorities will at an early date take steps to finally settle the matter by subsidizing the company.

Mr. BURLESON. With you permission I will suggest that that letter be submitted.

General MILLS. I will state that it is in the hands of the printer, but I failed to get it printed in time.

The CHAIRMAN. I think that had better be submitted.

Mr. MCGOWAN. I would like to know what the paper was?

The CHAIRMAN. It is a report of Colonel Engledue—a report of the president of the Rio Grande Dam and Irrigation Company—at a stockholders' meeting in London about four years ago.

Mr. BURLESON. Is that the same company as the Elephant Butte Company.

Mr. MCGOWAN. No; it is not. It is an English company that was exploiting this matter for the purpose of furnishing funds to us. We made a lease to them for the purpose of getting funds. After expending \$30,000 we found it was impossible for us to raise the money, it being during the panic of 1893, and the project was exploited in

England, and Mr. Engledue, who is president, put out a prospectus for the purpose of raising the money.

General MILLS. They furnished the money.

Mr. McGOWAN. They did not furnish all of it.

Mr. BURLESON. Is Mr. Engledue connected with the Elephant Butte Company?

Mr. McGOWAN. Not except by contract. Whatever it is, it will show for itself. It is a report to its own people, and not to the American company. I represent the American company.

The CHAIRMAN. This was sent by him to Mr. Adee, Assistant Secretary of State.

General MILLS. It was sent to the Secretary of State.

The CHAIRMAN. Will you be ready by next Monday to present a brief here?

Mr. McGOWAN. Yes, sir.

General MILLS. Mr. P. D. Cunningham, the consulting engineer of the commission having in consideration the equitable distribution of the waters of the Rio Grande, is here and will be present at your next meeting to give such technical testimony as may be required by your committee.

(Thereupon at 12 o'clock the committee adjourned until 10 o'clock Monday, February 11, 1901.)

For letter of Colonel Engledue, submitted by General Mills and quoted in above testimony, see pages 117-126, inclusive.

against The Elephant Butte Dam Company, of New Mexico, and that certain propositions of compromise was made pro and con relating to the settlement of the matters in controversy in the suit. Will you kindly inform me what these propositions were, and the reasons why the same was not acted upon and an amicable settlement of the controversy made? I am the author of the pending bill, and need the above information for the use of the committee in charge of my bill.

Respectfully,

JNO. H. STEPHENS,
Member of Congress from Texas.

Judge BURCH,
Department of Justice, City.

DEPARTMENT OF JUSTICE,
Washington, D. C., February 13, 1901.

SIR: In obedience to your request of the 11th instant, a copy of which is hereto attached, I have the honor, with the consent of the Attorney-General, to reply as follows:

Having been placed in charge of the case of the United States against the Rio Grande Dam and Irrigation Company, a suit in equity for an injunction, in the course of the preparation for trial of the same I visited Las Cruces, N. Mex., during the month of September, 1899, I think. While there Henry D. Bowman, receiver of the United States land office at that place, called upon me and complained of the

Government for its interference with the Elephant Butte dam project. After listening to him at length I replied that I could not consider the United States in anywise blameworthy for seeking to protect the rights of all of its people as against a single company, adding that if the defendant company should be willing to take its proportionate share of the waters of the Rio Grand in such a way as not to seriously interfere with navigation, I had no doubt the Departments of State and Justice would favorably consider such a course.

Thereupon he urged me to meet with Judge Newcomb, of the same place, one of the counsel for defendants. I promptly assented, and met Judge Newcomb. The matter was talked over at length and seemed to be regarded as feasible and reasonable by both Bowinan and Newcomb, and I returned to Washington with an assurance from them that I would hear from them as soon as the board could be called together. Later, and before I returned to El Paso to prepare and try the case, I received a letter from Judge Newcomb saying, in substance and effect, that there was reason to hope for a settlement, and asking me to consult with the Attorney-General and name the best terms which could be procured. I thereupon called upon the Attorney-General, and, as I was about to go West to take up the preparation and trial of the case, I was directed by him to confer with the defendants, upon my arrival, upon the basis of any fair and reasonable terms which would secure a recognition of the Rio Grande as a navigable stream, and as such under the control of the United States, and which would grant the defendants the right to build their dam under Government supervision in such a way as to secure them their equitable proportion of the waters of the river to any such extent as would not impair navigation of the stream where navigable. Upon reaching El Paso I wired Judge Newcomb of my arrival and invited a conference, which was finally secured after much trouble and, apparently, great disinclination upon their part.

This conference was held at the office of the company in El Paso, and at the same I was accompanied by Judge W. B. Brack, whom I invited to be present with me. The matter was discussed at considerable length, and I offered, in behalf of the Government, to submit to the Attorney-General any arrangement which would substantially accord with the proposition above set forth. They thereupon asked time to confer with the English board of directors or authorities of their company, asserting that, as the whole of the money came from England, they were in duty bound to abide by such decision as might be made over there. I met them again the next day, or the second day subsequent to the first meeting, and they then informed me that the substance of their reply from Dr. Boyd, the chief person in authority in England in their company affairs, was that they would accept no compromise except one which would give them complete control of the waters of the stream. In opening the case, upon its trial, and in the argument at the closing of the case, I informed the court of the Government's willingness to have a decree entered in substantial compliance with the suggestions above mentioned, but counsel for defendants indignantly spurned the proposition and frankly told the court they wanted a decree dismissing the bill or nothing.

Very respectfully,

M. C. BURCH,
Special Assistant Attorney.

HON. JOHN H. STEPHENS, M. C.,
House of Representatives, Washington, D. C.

FEBRUARY 18, 1901.

CHAIRMAN, SUBCOMMITTEE, FOREIGN AFFAIRS COMMITTEE,

House of Representatives.

SIR: In compliance with your request that I submit in writing a supplement to my unfinished testimony before your committee on the 5th instant, I beg to state that I fear I did not make my answer quite clear to Mr. Burleson's question regarding the remedy the people of the Mesilla Valley would have against the Elephant Butte Company provided they were required to let pass the 500 cubic feet for the El Paso Valley and there should not be sufficient water left to supply the agriculturists in the Mesilla Valley with water, to which they were entitled by prior appropriation.

In further explanation I beg to state that, in my opinion, if the Elephant Butte dam is built and the flood water stored from year to year, while there may not be sufficient flood water in some particularly dry years to furnish all that have prior rights below with the full amount to which they are entitled, the general average produced by the conservation of water in extreme flood years would prove sufficient to abundantly supply all rights below, in the order of priority, with a large surplus, but not sufficient surplus to permanently irrigate all the lands that the Elephant Butte Company contemplate in their prospectus. I understand the citizens of New Mexico in the Mesilla Valley would have ample redress in the Territorial courts to compel this supply (if not, this bill secures it to them); but this is not true of citizens of Mexico in the El Paso Valley, as they have no standing in the Territorial or other courts of the United States, and the restraint proposed in this bill is intended to secure the last-named people in their equity to the water.

The attorney for the Elephant Butte Company has laid great stress upon the opinion of Attorney-General Harmon that Mexico forfeited her legal right to any portion of the waters flowing from the United States by failing to have it "nominated in the bond" of the treaty of peace, but frankly admits, however, that the present Attorney-General dissents from this opinion, and omitting as well to state that in the last paragraph of this opinion it is clearly stated that the matter is still open as a question of comity for consideration by the two governments; and this is what the bill proposes by the very language of its title, "an equitable distribution of the waters," and surely this great nation, in its overwhelming power, will not insist upon the want of ironclad words in a bond when equity and right intervene.

To equalize any possible bias from self-interest (in the spirit of the golden rule), let us suppose, for instance, that the Rio Grande ran north from Mexico into Texas; that a large community of Americans had maintained themselves in prosperity and peace for three hundred years in pursuits for which the flow of the river was indispensable to maintain, and which if interrupted would utterly destroy their homes and pursuits, and that Mexico had started new communities, the development of which had appropriated the waters necessary to the life and existence of the older American community and rendered it utterly impossible to exist, how long would the Americans tolerate this injustice, even if there were no legal instruments binding Mexico to a just and equitable adjudication? This bill deprives none of either vested or equitable rights, but provides only remedies for wrongs.

International adjustments must of necessity deal in equities, since

there are no fixed laws to determine them nor courts to enforce them, save the last resort of arms.

The attorney for the Elephant Butte Company also claims a right to the entire flow of the Rio Grande at Elephant Butte by reason of a right of way granted February 1, 1895, by the Secretary of the Interior, under sections 18 and 19 of the act approved March 3, 1891; but this right of way specifically states, "Approved, subject to any valid existing rights" (see Senate Doc. No. 229, Fifty-fifth Congress, second session), and section 18 of the law referred to states explicitly,

to the extent of the ground occupied by the water of the reservoir and of the canal and its laterals, and 50 feet on each side of the marginal limits thereof; * * * and the privileges herein granted shall not be construed to interfere with the control of water for irrigation and other purposes under authority of the respective States and Territories,

so that it would not appear that this authority had in contemplation the conveyance of any control of the flow of the waters of the Rio Grande, but simply the right of way and use of public lands for the purpose of a dam and reservoir.

The attorney for the Elephant Butte Company lays great stress also upon the expression "first come, first served," whatever he may have intended to mean by that. His argument would seem to indicate that he claims that all the prior appropriation below the Elephant Butte Dam was taken from the normal flow and not the flood waters, and that the former appropriators had never used the floods, and that his company had originally conceived the novel idea of appropriating the flood waters as first comers.

The records of the investigations by the joint commissioners and joint engineers, abundantly published in Senate Doc. No. 229, Fifty-fifth Congress, second session, show conclusively that for the past twelve years the flood season began about the 15th of May and continued until about the 1st of August, about seventy-five days, some seasons more and some seasons less, and that these seventy-five days embrace the most important part of the irrigation season; consequently, during these twelve years of which we have record, and inferentially during the three hundred years past, the appropriators in Mexico have used principally the flood waters, only a smaller portion of their appropriations being used after the floods had subsided. In this direction the company itself has testified in its prospectus in the following words: "Though the greatest flow of the river occurs during the months of April, May, June, and July, just when the orchards and vineyards most require irrigation" (see p. 6, Senate Doc. 229), and also by President Engledue, of the Elephant Butte Company, in his statement to the stockholders that "the flood season being the irrigation season." It is apparent, therefore, that this claim has no foundation in fact, but, on the contrary, the greater prior use below has been from flood waters.

Supporting this claim of first comers the attorney for the Elephant Butte Company says that his company had no knowledge of any prior appropriation or project to appropriate by an international dam. Here he is seriously mistaken. While pursuing my investigations in my office in El Paso in 1889, Mr. Campbell, then engineer of the city of El Paso, now and since its conception the engineer of the Elephant Butte Company, by request was given access to the maps, plans, and estimates of the international dam and reservoir. The original promoters of that company, Loomis, Berien, and Roberts, of El Paso,

had also knowledge of the plans and specifications of this proposed international work, as well as of the concurrent resolution for "the construction of a dam across said river at or near El Paso, Tex., for the storage of its waste water," passed April 29, 1890, and the expenditure of a large amount of Government funds in the investigation; and about three years later on, when the two nations were about to enter into a treaty for the construction of this international dam and reservoir to store the flood waters, these gentlemen developed and announced as "private and confidential," through their prospectus (see p. 4, Senate Doc. 229), to English capitalists their scheme, stating that "The statements herein are based upon reports made by Col. Anson Mills, United States Army," (see p. 7) knowing that I had never visited the location of their proposed dam and that I had no knowledge of their proposed scheme.

I think, therefore, that I risk nothing in saying that but for the projected international dam the project at Elephant Butte would never have been conceived. Further, that even without any restriction from the Federal Government it will never be built unless they are satisfied that the international dam will be built, for there is at present no sufficient incentive to a possible profitable investment, there being no present call for water in that locality to justify such large expenditures, unless forsooth they could hold up the international project and compel by their claim of the absolute control of the entire flow an indemnity compromise from the United States Government, as suggested by the president, Colonel Engledue, to the stockholders in his communication submitted with my testimony on the 5th instant. In case the international dam is constructed without constraint to compel the passage of water to others below having rights by prior appropriation, I dare say there would be incentive enough in this direction to cause the building of the Elephant Butte Dam.

By permission of the Attorney-General, I submit herewith copy of a letter from the present president of the Elephant Butte Company, Mr. Nathan E. Boyd, dated August 29, 1900, to the Attorney-General, which may be of interest to the committee.

In conclusion, I beg to state that while I am an American before I am a Mexican, each step I have taken in this investigation during the past twelve years has progressively impressed and confirmed me in the opinion that Mexico has a righteous and just cause of complaint and that the redress asked for is the only practical one and ought to be granted, for a money indemnity would reach only a few of the actual sufferers, and those after long delay and amounts much diminished by intervening agents; and though I have been repeatedly solicited, both by representatives of the Elephant Butte Company and the citizens of El Paso, Tex., to modify my recommendation so as to permit the construction of the Elephant Butte Dam without Federal constraint, I can not, under my oath of office and my best understanding, find myself able to do so, and outside of my official duties I could not be instrumental in encouraging the fruitless expenditure (save benefits from local disbursements) of over \$2,000,000 to build such a colossal wall, without water, to stand as a monument to my imbecility.

Respectfully submitted.

ANSON MILLS,
Brigadier-General, U. S. A. (Retired), Commissioner
Having in Charge the Investigations for the
Equitable Distribution of the Waters of the Rio Grande.

WASHINGTON, D. C., *August 29, 1900.*

(Written from Las Cruces, N. Mex.)

Hon. JOHN W. GRIGGS,

Attorney-General, Department of Justice, Washington, D. C.

DEAR SIR: Re United States *v.* The Rio Grande Dam and Irrigation Company. I recently received a communication from the State Department to the effect that my statement of case anent the above had been referred to your Department "with a request for a report on the same."

In view of the exceptionally important bearing this case has upon the future of New Mexico, and in fact upon the future of the whole of the arid West where irrigation is essential to the agricultural development of the country, I venture to suggest that I be permitted to appear before you and in person give evidence as to the disastrous effect of a second appeal to the Federal Supreme Court against the findings of the Territorial courts.

As I have recently pointed out, the attempts that have been made to invalidate the vested rights of the Rio Grande Dam and Irrigation Company, involving the security upon which large sums have been raised, have most seriously affected abroad the credit of American irrigation and other industrial undertakings, so largely dependent upon cheap capital for development.

Grave charges have been freely and widely circulated in Great Britain, impugning the good faith of the present Administration. It is universally believed that the attacks upon the Rio Grande Dam and Irrigation Company have not been instituted by the Government in good faith. It is held that in throwing open for selection reservoir sites on the Rio Grande, in approving the plans of the company, in officially confirming to the company the reservoir sites described in the company's maps and plans, and then, after large sums had been raised upon the company's securities, attempting to invalidate the rights so conceded, the United States Government has adopted a course dishonest and subversive of the very foundation of commercial usage and stability, a course that would not, and could not, be tolerated at the hands of private individuals in the commercial world.

Now, whilst I have been the greatest sufferer from the attacks upon the company, having a larger amount of capital invested in the Rio Grande enterprise than all the other debenture and shareholders combined, I have made it my duty to refute, so far as possible, the charges that have been made against the good faith of your Department. Quixotic as it may seem, I have felt that, as a self-respecting American citizen, jealous of my country's honor, it was imperative that I should endeavor, and if need be sacrifice my personal interest, to convince my English friends, whom I had in good faith induced to join me in financing the Rio Grande enterprise, that your Department had been forced into taking action against the company by (1) the demands of the Mexican minister, and (2) by the legal necessities growing out of the conflict between the laws of this country based upon the common law of England and certain laws which obtain in the arid West based upon the civil law of Rome--inherited from Mexico.

Unhappily, such arguments as I have been able to advance (see my letter of the 30th July, 1899, to Lord Hamilton, copy of which was sent to you by the State Department) stand stultified and disproved if you again appeal to the Federal Supreme Court against the finding of the court of inquiry as to the question of fact.

I am advised that the investigations that have recently been made,

under Mr. Follette's supervision, on the Rio Grande below El Paso and about the mouth of the Rio Conchos have not been favorable to the contention that the flood waters that flow down the Rio Grande in New Mexico contribute substantially to the navigability, such as it is, of the river below Rio Grande City. It is common talk here that Mr. Follette has been forced to resign his position because he would not render a report favorable to the Government's contention and in conformity with Gen. Anson Mills's demands. However this may be, it is quite clear that in appealing to the Federal Supreme Court no useful purpose may be served. It will only needlessly involve my company in further expense and prejudice the future of New Mexico. In fact, a second appeal to the Federal Supreme Court will finally convince everyone throughout the arid West that the present Administration is determined to sacrifice the irrigation rights of Colorado and New Mexico in the interest of the international dam scheme, and I am fully satisfied that if your Department does appeal to the Federal Supreme Court it must be a course that would not only antagonize a large number of voters in the arid West, men deeply interested in the irrigation question, but by adding to the distrust abroad of irrigation securities still further prejudicially affect the credit of the arid States upon which their development so largely depends.

In self-defense, being the largest investor in the Rio Grande enterprise, I have been devoting my time to enlisting the support of the people here in the West that will be directly and indirectly affected by any measure subversive of the principles upon which their irrigation rights are based; and although I have no desire to become involved in any political controversy, it is only right that I should announce that it is my firm intention to take an active part in the forthcoming campaign in Colorado and other arid States, where the issue is supposed to be somewhat doubtful, in support of Mr. Bryan, if the Government does not drop the attacks upon my company; that is, unless the findings of the Territorial supreme court are accepted as final, and unless I receive from the State Department some satisfactory assurance that our rights will be protected in the future from the machinations of Gen. Anson Mills and the other supporters of the international dam proposition, who have, during the past four years, repeatedly endeavored to secure legislative action that would involve my company in litigation, I shall actively cast my lot with the Democratic party and contribute my mite, financial and otherwise, in favor of Mr. Bryan.

We secured our rights under a Democratic Administration, and for four years, since Mr. McKinley came into office, we have had to defend them, thanks to the efforts of those responsible for the international dam scheme. I am convinced that the heads of Departments at Washington, your own Department in particular, have been grossly misled by the willful, I may say criminal, misrepresentations made by Gen. Anson Mills. But now that I have filed at Washington a statement of our case, and that the State Department has undertaken to investigate the matter and to protect all vested interests involved, it seems impossible that the attacks upon my company can continue.

I shall leave here in the course of a few days for Washington, and upon my arrival I hope you will do me the honor and the justice of granting me a personal interview. I believe that if you will concede to me the privilege of explaining to you, in person, the facts of our case the Rio Grande Dam scandal will cease to exist.

Yours, obediently,

NATHAN E. BOYD.

WASHINGTON, *February 18, 1901.*CHAIRMAN SUBCOMMITTEE FOREIGN AFFAIRS COMMITTEE,
House of Representatives.

SIR: Responding to the invitation extended to me to submit a memorandum relative to H. R. No. 9710, I have the honor to invite your attention to the following:

The representative of the Rio Grande Dam and Irrigation Company, in opposition to the bill under consideration, has stated:

1. That irrigators in the El Paso Valley have been using the "regular flow," "natural flow," or "run of stream," and not the torrential flow.

2. That hitherto the flood waters of the Rio Grande have all gone to waste.

3. That his corporation does not claim prior right to natural flowage, but that it proposes to appropriate all flood waters not heretofore appropriated.

Since May 1, 1897, the International Boundary Commission has determined the discharge of the Rio Grande at El Paso by a series of continuous measurements by current meter (not less than two measurements per week) and semidaily gauge readings. The results of these measurements, by months and years, are shown in the following tables:

Month.	Discharge in acre- feet.	Mean dis- charge, cubic feet per second.	Days flow- ing.	Days not flowing.
1897.				
May.....	515,000	8,310	31	.....
June.....	365,500	6,090	30	.....
July.....	82,410	1,330	31	.....
August.....	8,200	130	26	5
September.....	42,000	700	26	4
October.....	109,000	1,760	31	.....
November.....	69,900	1,165	30	.....
December.....	40,540	650	31	.....
Total.....	1,232,560	.....	236	9
1898.				
January.....	30,490	500	31	.....
February.....	31,340	560	28	.....
March.....	22,780	370	31	.....
April.....	97,100	1,620	20	10
May.....	150,060	2,420	31	.....
June.....	115,800	1,930	30	.....
July.....	200,200	3,230	31	.....
August.....	32,800	530	31	.....
September.....	2,400	40	25	5
October.....	.....	.....	.....	31
November.....	.....	.....	.....	30
December.....	5,600	90	29	2
Total.....	688,570	.....	287	78
1899.				
January.....	13,000	210	31	.....
February.....	11,200	200	28	.....
March.....	7,100	115	31	.....
April.....	8,200	150	30	.....
May.....	10,500	170	31	.....
June.....	.....	.....	.....	30
July.....	19,700	320	13	18
August.....	440	7	7	24
September.....	.....	.....	.....	30
October.....	.....	.....	.....	31
November.....	.....	.....	.....	30
December.....	2,800	48	26	5
Total.....	73,640	.....	197	168

Month.	Discharge in acre- feet.	Mean dis- charge, cubic feet per second.	Days flow- ing.	Days not flowing.
1900.				
January.....	8,110	132	31	.....
February.....	5,680	102	28	.....
March.....	460	8	13	18
April.....	300	5	30	.....
May.....	44,810	729	20	11
June.....	93,100	1,565	30	.....
July.....	70	1	7	24
August.....	.....	.....	.....	31
September.....	16,470	277	22	8
October.....	.....	.....	.....	31
November.....	.....	.....	.....	30
December.....	730	12	10	21
Total.....	169,730	.....	191	174

Number of days when discharge of river at El Paso was—

	Less than 50 cubic feet per second.	Nothing.	Total.
1897—May 1 to Dec. 31.....	2	9	11
1898.....	20	78	98
1899.....	49	168	217
1900.....	74	174	258

The above data, covering a period of three years and eight months, show a discharge at El Paso varying between 1,232,560 acre-feet in eight months of 1897 and 73,640 acre-feet during the whole of 1899; also that the river was practically dry two hundred and fifty-eight days during the year 1900.

The spring flood of 1897 covered three full months (May, June, and July), during which time 78 per cent of the total discharge for eight months (May 1 to December 31) occurred. The spring flood of 1898 extended over April, May, June, and July, and amounted to 82 per cent of the total flow for the year. During the first seven months of 1899 (no flow in June) 96 per cent of the total discharge for the year passed El Paso. The spring flood of 1900 occurred during the latter half of May and the whole of June, and its volume was 81 per cent of the total discharge for the year.

It appears from the report of Mr. W. W. Follett, C. E., in Senate Doc. No. 229, Fifty-fifth Congress, second session, that in 1895 irrigation in New Mexico covered 197,000 acres. The Rincon and Mesilla valleys comprise all the irrigable valley lands between Elephant Buttes and El Paso. From the above-mentioned report the following statement of lands irrigated in these two valleys has been compiled:

Irrigation in New Mexico between Elephant Buttes and El Paso.

	Number of acres and time of appropriation.						Total.	
	Prior to 1848.		Between 1848 and 1880.		After 1880.			
	Acres.	Acre-feet.	Acres.	Acre-feet.	Acres.	Acre-feet.	Acres.	Acre-feet.
Rincon Valley .....	.....	.....	5, 100	12, 107	4, 750	7, 430	9, 850	19, 537
Mesilla Valley	4, 600	11, 500	18, 400	44, 117	4, 100	8, 050	27, 100	63, 667
Total	4, 600	11, 500	23, 500	56, 224	8, 850	15, 480	36, 950	83, 204

Appropriation for 13 per cent of the total acreage was made prior to 1848; appropriation for 63 per cent of the total acreage was made between the years 1848 and 1880, and 24 per cent of the total acreage has been appropriated for since 1880. Prior to 1844 the Mesilla Valley was overrun by Apache Indians, and the same tribe held sway in the Rincon Valley as late as 1860.

The investigation of the International Boundary Commission (in Senate Doc. No. 229, Fifty-fifth Congress, second session, already referred to) showed that, approximately, 40,000 acres had been irrigated in the El Paso Valley, and that a flow of about 750 cubic feet per second had been appropriated for such irrigation, of which approximately 400 cubic feet per second had been appropriated by the Mexican side of the valley and about 350 cubic feet per second had been appropriated by the Texas side of the valley; that the amount of water used in recent years has fallen much below this amount by reason of lack of water; and, further, that these appropriations of water were of ancient date and were made largely long prior to the appropriations in the Rincon and Mesilla valleys, and only one canal of importance has been constructed within recent years (the El Paso Canal, 1888), and that was in fact merely a change in the outtake of water previously appropriated.

It is believed that the foregoing data justify the following conclusions:

First. The Rio Grande in southern New Mexico and western Texas is purely a torrential stream, and no specific rate of flow can properly be designated as "regular flow," "natural flow," or "run of stream." Any rate of flow between nothing and the maximum daily rate might be classified by various individuals under these various designations. The separation of the waters of the Rio Grande into two classes (regular and flood flow) is not only impracticable but absurd if it be considered that the classifying authority would (in case of construction of the Elephant Buttes project) be officials of a corporation whose income would be dependent upon the amount of water diverted from the stream and whose natural object would be to store as much water as possible. This is given emphasis by the character of the New Mexican irrigation laws, which do not (unless recent legislation so requires) provide for officials vested with authority to supervise and control the use of water for irrigation, and by the fact that a large proportion of the El Paso Valley appropriators have not such political rights as would enable them to employ even the slow method of injunction to redress any wrongs they might suffer.

Second. Irrigators in the El Paso Valley have been largely dependent upon the flood flow of the river for their water supply. These floods may last from six weeks to six months, and they generally occur during the period of greatest agricultural need.

Third. The people of the El Paso Valley are entitled by appropriation to approximately 750 cubic feet of water per second; the appropriation of this water was made not only prior to the inception of the Elephant Buttes project but prior to practically all other appropriations. This appropriation of 750 cubic feet per second was made not for one day or one hundred days per annum, but for that specific amount of water throughout the year, and at the time when the appropriation was made the flow of the river was such as to enable the appropriators to avail of the full amount at practically all times. Various causes, the principal of which is subsequent appropriation above, have diminished the flow of the river to such extent that for thirty-four of the forty-four months covered by the measurements above given in the tables of El Paso discharge, the mean monthly rate of flow fell below the 750 cubic feet per second appropriated.

Fourth. The total discharge of the Rio Grande at El Paso during

the years 1898, 1899, and 1900 has not been equivalent to a regular discharge of 750 cubic feet per second for that period.

The purpose of the international dam, as proposed, is to provide for the old appropriators of the El Paso Valley a means of obtaining again that to which they have right by priority of appropriation and which has been taken from them by subsequent upstream appropriation; and it makes this provision in such manner as not to interfere with or destroy agricultural interests which have already been developed.

In view of existing conditions, it would scarcely appear just to permit, for the development of new agricultural interests, the construction of a storage reservoir with a capacity of a quarter of a million acre feet when its operation, as proposed, would render impossible the restoration to those among the first appropriators of their property in water which has been restrained.

Respectfully submitted.

P. D. CUNNINGHAM,

*Consulting Engineer of the Commission Having in Charge
the Investigations for the Equitable Distribution
of the Waters of the Rio Grande.*

WASHINGTON, D. C., February 18, 1901.

HON. J. P. HEATWOLE,
House of Representatives.

DEAR SIR: I herewith submit to the subcommittee of the House Committee on Foreign Affairs, of which you are chairman, a brief and argument in opposition to the bill (H. R. 9710) known as the "Stephens bill," and as exhibits thereto: Exhibit A, argument before the Senate by Governor Otero; Exhibit B, extracts from a letter from J. L. Campbell, civil engineer, to the Hon. J. W. Griggs, Attorney-General; Exhibit C, memorial presented to the Senate, being Senate Doc. No. 104, Fifty-sixth Congress, second session.

Very respectfully,

J. H. MCGOWAN,
Attorney R. G. D. and Ir. Co.

Before the House Committee on Foreign Affairs, in opposition to the bill (H. R. 9710) known as the "Stephens bill," and entitled "A bill to provide for the equitable distribution of the waters of the Rio Grande River between the United States of America and the United States of Mexico, and for the purpose of building an international dam and reservoir on said river at El Paso, Texas."

This Stephens bill is based, so far as its basis may be ascertained from its preamble, upon the alleged violation by the United States, "of the spirit of article 7 of the treaty of peace of Guadalupe Hidalgo." The intent is to make restitution for the alleged wrongs inflicted under disregard of our treaty obligation—not the letter of the obligation but the spirit of it—as interpreted by Mexico. That the committee may conveniently consult the article said to be violated, I here give it in full:

ART. 7. The river Gila and the part of the Rio Bravo del Norte lying below the southern boundary of New Mexico being, agreeably to the fifth article, divided in the middle between the two Republics, the navigation of the Gila and of the Bravo

below said boundary shall be free and common to the vessels and citizens of both countries; and neither shall, without the consent of the other, construct any work that may impede or interrupt, in whole or in part, the exercise of this right; not even for the purpose of favoring new methods of navigation. Nor shall any tax or contribution, under any denomination of title, be levied upon vessels or persons navigating the same or upon merchandise or effects transported thereon, except in the case of landing upon one of their shores. If for the purpose of making the said rivers navigable, or for maintaining them in such state, it should be necessary or advantageous to establish any tax or contribution, this shall not be done without the consent of both Governments.

The stipulations contained in the present article shall not impair the Territorial rights of either Republic within its established limits. (9 Stat., 928, 929.)

This article was alluded to, but in no wise amended, by article 4 of the Gadsden treaty (10th Stats., 1034), which reads as follows:

ART. 4. (Last clause.) The several provisions, stipulations, and restrictions contained in the seventh article of the treaty of Guadalupe Hidalgo shall remain in force only so far as regards the Rio Bravo del Norte below the initial of the said boundary provided in the first article of this treaty; that is to say, below the intersection of the 31° 47' 30" parallel of latitude, with the boundary line established by the late treaty dividing said river from its mouth upward, according to the fifth article of the treaty of Guadalupe. (10 Stat., 1034.)

It is seen by the above, which gives some insight into the intent of the parties to the treaty, that neither the original treaty nor the Gadsden treaty undertook to deal with the river in any way except to designate it as a boundary between the two countries and to preserve its navigability. The words in the article just quoted—"the Rio Bravo del Norte below the initial of the said boundary provided in the first article of this treaty"—are significant as interpreting the meaning of article 7 of the Guadalupe treaty.

Some reference is made in article 3 of the convention of November 12, 1884, to the river and the preservation of its navigation. (24 Stat., 1012.)

Further reference is also made in the convention of March 1, 1889, article 1 and article 5. (26 Stats., 1513.)

An examination of these treaty provisions will disclose the fact that they only deal with the river where it forms the boundary between the two countries. To avoid all possible doubt on this point, it will be observed that the last clause of article 7 of the Guadalupe treaty expressly provides that the stipulations contained therein shall "not impair the Territorial rights of either Republic within its established limits."

It is therefore quite clear that the "constructions" inhibited were only those that might be built in the stream below the south line of New Mexico. "The navigation * * * of the Bravo below said boundary shall be free and common to the vessels and citizens of both countries; and neither shall, without the consent of the other, construct any work that may impede or interrupt, in whole or in part, the exercise of this right"—the right of navigation.

A similar construction is given by articles 1 and 5 of the convention of March 1, 1889, *supra*. The language of article 5, first clause, is as follows:

ART. 5. Whenever the local authorities on any point of the frontier between the United States of America and the United States of Mexico, in that portion in which the Rio Grande and the Colorado River form the boundary between the two countries, shall think that works are being constructed in either of those rivers such as are prohibited by article 3 of the convention of November 12, 1884, or by article 7 of the treaty of Guadalupe Hidalgo, of February 2, 1848, they shall so notify their respective commissioners, etc.

It is beyond the bounds of controversy that these treaties and conventions do not deal directly or indirectly with the question of the use of the waters of the Rio Grande above the south line of New Mexico for any purpose. When the high contracting powers, with all the deliberation which surrounds the making of treaties between two independent nations, provided that there should be no impairment of the territorial rights of either Republic within its established limits, they precluded any idea or thought of a demand to be made by the lower country upon the upper for a share in the waters gathered within the territorial limits of the upper country.

It is also clear that the author of this bill realized that no legal claim could be made by Mexico for any part of the waters of the Rio Grande running through our own territory based on these treaties. He only charges in his preamble that our use of the waters to fructify our own soil was a violation of the spirit of the contract.

But this whole question is dealt with by the Attorney-General in 21 Opinions, 274. In his syllabi to his own opinion he states, among other things, that

the taking of water for irrigation from the Rio Grande above the point where it ceases to be entirely within the United States and becomes the boundary between the United States and Mexico is not prohibited by said treaty. Article 7 is limited in terms to that portion of the Rio Grande lying below the southern boundary of New Mexico, and applies to such work alone as either party might construct on its own side. The only right the treaty professed to create or protect with respect to the Rio Grande was that of navigation. Claims against the United States by Mexico for indemnity for injuries to agriculture alone, caused by scarcity of water resulting from irrigating ditches wholly within the United States, at places far above the head of navigation, find no support in the treaty.

Again to the Attorney-General, referring to any possible obligation existing on the part of the United States under international law or the comity of nations, uses this language:

The rules, principles, and precedents of international law impose no duty or obligation upon the United States of denying to its inhabitants the use of the water of that part of the Rio Grande lying entirely within the United States, although such use results in reducing the volume of water in the river below the point where it ceases to be entirely within the United States.

The fact that there is not enough water in the Rio Grande for the use of the inhabitants of both countries for irrigation purposes does not give Mexico the right to subject the United States to the burden of arresting its development and denying to its inhabitants the use of a provision which nature has supplied entirely within its own territory. The recognition of such a right is entirely inconsistent with the sovereignty of the United States over its national domain.

A study of the treaties and of the opinion which I have just quoted will convince, I am sure, any unprejudiced lawyer or jurist that the law is accurately stated by Attorney-General Harmon. A similar conclusion was reached by the unanimous judgment of the supreme court of the Territory of New Mexico in the case of the United States *v.* The Rio Grande Dam and Irrigation Company et al., to be found in the record of that case now pending in the United States Supreme Court.

The bill under consideration, having first stated that the reason for its enactment was the violation of the spirit of article 7 of the treaty of peace of Guadalupe Hidalgo, proceeds in section 1 to fix the construction which shall thereafter be given to four separate statutes of the United States. That the committee shall not proceed in the dark, I here give the substance of each of these statutes.

The act of March 3, 1891, is found in 26 Stats., 1101, being section 18 of an act to repeal the timber-culture laws. That section reads as follows:

SEC. 18. That the right of way through the public lands and reservations of the United States is hereby granted to any canal or ditch company formed for the purpose of irrigation and duly organized under the laws of any State or Territory which shall have filed, or may hereafter file, with the Secretary of the Interior, a copy of its articles of incorporation, and due proofs of its organization under the same, to the extent of the ground occupied by the water of the reservoir and of the canal and its laterals, and 50 feet on each side of the marginal limits thereof; also the right to take from the public lands adjacent to the canal or ditch material, earth, and stone necessary for the construction of such canal or ditch: *Provided*, That no right of way shall be so located as to interfere with the proper occupation by the Government of any such reservation, and all maps of location shall be subject to the approval of the department of the Government having jurisdiction of such reservation, and the privilege herein granted shall not be construed to interfere with the control of water for irrigation and other purposes under authority of the respective States or Territories.

The act of January 21, 1895, is found in the 28th Stats., 635, and is entitled "An act to permit the use of right of way through the public lands for tramroads, canals, and reservoirs, and for other purposes." It provides:

That the Secretary of the Interior be, and hereby is, authorized and empowered, under general regulations to be fixed by him, to permit the use of right of way through the public lands of the United States not within the limits of any park, forest, military or Indian reservation, for tramroads, canals, or reservoirs, to the extent of ground occupied by the water of the canals or reservoirs, and 50 feet on each side of the marginal limits thereof, or 50 feet on each side of the center line of the tramroad, by any citizen or any association of citizens of the United States engaged in the business of mining or quarrying or of cutting timber and manufacturing lumber.

The act of February 26, 1897, is found in the 29th Stats., 599. It reads:

That all reservoir sites reserved, or to be reserved, shall be open to use and occupation under the right of way act of March 3, 1891. And any State is hereby authorized to improve and occupy such reservoir sites to the same extent as an individual or private corporation, under such rules and regulations as the Secretary of the Interior may prescribe: *Provided*, That the charge for water coming in whole or part from reservoir sites used or occupied under the provisions of this act shall always be subject to the control and regulation of the respective States and Territories in which such reservoirs are in whole or part situate.

The act of May 11, 1898, is found in 30 Stats., 404. It reads as follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the act entitled "an Act to permit the use of the right of way through the public lands for tramroads, canals, and reservoirs, and for other purposes," approved January 21, 1895, be, and the same is hereby, amended by adding thereto the following:

"That the Secretary of the Interior be, and hereby is, authorized and empowered, under general regulations to be fixed by him, to permit the use of right of way upon the public lands of the United States not within the limits of any park, forest, military or Indian reservations, for tramways, canals, or reservoirs, to the extent of the ground occupied by the waters of the canals and reservoirs, and 50 feet on each side of the marginal limits thereof, or 50 feet on each side of the center line of the tramroad, by any citizen or association of citizens of the United States for the purpose of furnishing water for domestic, public, and other beneficial uses.

"SEC. 2. That the right of way for ditches, canals, or reservoirs heretofore or hereafter approved under the provisions of sections 18, 19, 20, and 21 of the act entitled 'An act to repeal timber-culture laws, and for other purposes,' approved March 3, 1891, may be used for purposes of a public nature; and said rights of way may be used for purposes of water transportation, for domestic purposes, or for the development of power, as subsidiary to the main purpose of irrigation."

THE REVISED STATUTES.

Now, the above acts, that by the terms of the bill are to be interpreted, modified, and, so far as New Mexico is concerned, repealed, must be read in connection with the acts of 1866 and 1870, which form sections 2339 and 2340 of the Revised Statutes. They are as follows:

SEC. 2339. Whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and the decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals for the purposes herein specified is acknowledged and confirmed; but whenever any person, in the construction of any ditch or canal, injures or damages the possession of any settler on the public domain, the party committing such injury or damage shall be liable to the party injured for such injury or damage. (See 14 Stat., 252.)

SEC. 2340. All patents granted, or preemption or homesteads allowed, shall be subject to any vested and accrued water rights, or rights to ditches and reservoirs used in connection with such water rights, as may have been acquired under or recognized by the preceding section.

Thus the question of the use of the nonnavigable waters of the arid portions of our country for irrigation purposes was settled by solemn enactment of Congress thirty-five years ago.

The common law relating to riparian rights was not applicable to the condition of things found in the Western States and Territories, and the miners and those using the water of the streams for irrigation established the rule of prior appropriation, which came to be adopted by the local courts, and subsequently, as seen above, approved by Congress.

The Supreme Court has given construction to that act in *Atchison v. Peterson* (20 Wal., 507; bk. 22, L. ed., 414) and in *Basey v. Gallagher* (20 Wal., 670; bk. 22, L. ed., 452). In the latter case the controversy related to the use, for the purposes of irrigation, of the waters of Avalanche Creek, near its junction with the Missouri River. See also *Jennison v. Kirk* (98 U. S., 453; bk. 25, L. ed., 240), and *Brader v. Notoma Water, etc., Co.*, 101 U. S., 274; bk. 25, L. ed., 790). In this latter case Justice Field, delivering the opinion of the court, said:

We are of opinion that it is the established doctrine of this court that rights of miners who had taken possession of mines and worked and developed them, and the rights of persons who had constructed canals and ditches to be used in mining operations and for purposes of agricultural irrigation in the region where such artificial use of the water was an absolute necessity, are rights which the Government had, by its conduct, recognized and encouraged and was bound to protect before the passage of the act of 1866, and that the section of the act which we have quoted was rather a voluntary recognition of a preexisting right of possession, constituting a valid claim to its continued use, than the establishment of a new one.

Here is the highest legislative and judicial authority for doing what the Rio Grande Dam and Irrigation Company are proposing to do at Elephant Butte, provided "the local customs, laws, and the decisions of the courts" of New Mexico permit the same.

TERRITORIAL LAWS.

When the United States acquired the Territory, the existing laws were continued in force, and those laws of the Mexican Government, as they related to the use of water for agricultural purposes, were dis-

tinctly based upon the rule of prior appropriation; and one of the first enactments of the Territorial legislature provided that—

no inhabitant of said Territory shall have the right to construct any property to the impediment of irrigation of lands and fields, such as mills, or any other property that may obstruct the source of the water, as the irrigation of the fields should be preferable to all others.

In the general laws of New Mexico for the year 1880, under the chapter entitled "Chapter 1, acequias," was enacted the following:

SEC. 1. All the inhabitants of the Territory of New Mexico shall have the right to construct either private or common acequias, and to take the water for said acequias from wherever they can.

Subsequently (1886-87) the legislature enacted the incorporation law under which the Rio Grande Dam and Irrigation Company was organized. This law, it will be observed, provides only for irrigation companies. It is found in Chapter 12, page 29, Session Laws, 1886-87. I here give all the essential parts:

SEC. 1. Any five persons who may desire to form a corporation for the purpose of constructing and maintaining reservoirs and canals, or ditches and pipe lines, for the purpose of supplying water for the purpose of irrigation, mining, manufacturing, domestic and other public uses, including cities and towns, and for the purpose of colonization and the improvement of lands in connection therewith, for either or both of said objects, either jointly or separately, shall make and sign articles of incorporation, which shall be acknowledged before the secretary of the Territory, or some person authorized by law to take the acknowledgment of conveyances of real estate, and when so acknowledged such articles shall be filed with such secretary.

Sections 2, 3, and 4 prescribed the details of what the articles of incorporation shall contain, and the last clause of section 4 reads as follows:

May purchase, acquire, hold, sell, mortgage, and convey such real estate as such corporation may require to successfully carry on and transact the objects for which it was formed.

SEC. 17. Corporations formed under this act for the purpose of furnishing and supplying water for any of the purposes mentioned in section 1 shall have, in addition to the power hereinbefore mentioned, rights as follows:

1. To cause such examinations and surveys for their proposed reservoirs, canals, pipe lines, and ditches, to be made as may be necessary to the selection of the most eligible locations and advantageous routes, and for such purpose, by their officers, agents, and servants, to enter upon the lands or water of any person or of this Territory.

2. To take and hold such voluntary grant of real estate and other property as shall be made to them in furtherance of such corporation.

3. To construct their canals, pipe lines, or ditches upon or along any stream of water.

4. To take and divert from any stream, lake, or spring the surplus water for the purpose of supplying the same to persons to be used for the object mentioned in section 1 of this act, but such corporation shall have no right to interfere with the rights of or appropriate the property of any persons except upon the payment of the assessed value thereof, to be ascertained as in this act provided: *And provided further*, That no water shall be diverted if it will interfere with the reasonable requirements of any person or persons using or requiring the same when so diverted.

5. To furnish water for the purposes mentioned in section 1, at such rates as the by-laws may prescribe; but equal rates shall be conceded to each class of consumers.

6. To enter upon and condemn and appropriate any lands, timber, stone, gravel, or other materials that may be necessary for the uses and purposes of said corporations.

This incorporation law was amended in 1891 (Session Laws, p. 130), providing that persons, associations, or incorporations might enlarge ditches and canals, as well as construct new ones; providing for making a public record of their transactions, and that "no priority of right

for any purpose shall attach to any such construction, change, or enlargement until such record is made." Other provisions still further safeguard the interests of the public and the rights of previous appropriators of water.

THE STEPHENS BILL REPEALS OTHER LAWS THAN THOSE IT MENTIONS.

It must thus be clear that the irrigation laws of New Mexico are the irrigation laws of the United States, and that the acts of Congress of 1866 and 1870, and the whole body of laws of New Mexico relating to the use of the nonnavigable waters of that Territory for purposes of irrigation, are repealed by this Stephens bill, as well as the specific acts named in its first section.

Congress says that—

whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes, have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and the decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same.

The Territory of New Mexico does recognize, by its customs, laws, and decisions, the full rights of prior appropriators. Under those laws we have appropriated the flood waters at Elephant Butte. We could not appropriate a drop of water that had been previously appropriated by any other person in the Territory. If we attempted it the laws of the Territory would protect the prior appropriator. The law has been frequently invoked for that purpose, the reports of the local courts being full of such cases.

Now, it is no answer to this contention to say that the torrential waters of the Rio Grande gathered in New Mexico were previously appropriated by the citizens of Old Mexico. The laws of the United States and of New Mexico have no application to Old Mexico. Neither do they contravene, as we have seen, any treaty rights of these foreigners.

The officers of the Geological Survey and of the Agricultural Department have for years urged the impounding of the flood waters of the Rio Grande for use in irrigation, declaring that they are now an entire waste. To accomplish this a number of reservoir sites were established along the stream above El Paso by Congressional requirement. One of these was a short distance north of Elephant Butte and another just south of that point.

But it is not true that the Mexican citizens have been using the waters which the Rio Grande Dam and Irrigation Company propose to impound. And if it were true, their claims could not be heard to the destruction of the legally acquired rights of our own citizens.

THE BILL IS SOLELY FOR THE PROTECTION OF THE MEXICANS.

My argument has proceeded on the theory that the word "others," in the fourth line of page 3 of the bill, was meant to cover the residents and citizens of Old Mexico located on or along the river below El Paso. If it does not mean that, then the whole bill is nonsense. All others who have rights "by prior appropriation"—that is, other persons in New Mexico—are already protected by the laws of New Mexico and the laws of the United States; but the preamble discloses

conclusively that the bill is intended to protect some supposed rights of citizens of another nation.

The logic of the proposed measure, therefore, is this: That if a citizen of New Mexico, under and by virtue of her laws and the laws of the United States, shall appropriate water which before the treaty of Guadalupe Hidalgo served to feed the ancient ditches of Old Mexico, he shall be deemed guilty of a misdemeanor and subject to a fine of \$5,000 or imprisonment for one year, or both, in the discretion of the court. Taking the bill by its four corners, and reading it in connection with the statutes and decisions which I have cited, it means exactly that. It is rather an extraordinary proposition, and, with all due consideration, I think I am warranted in saying that it smacks of Mexican rather than American methods. Possibly the explanation may be found in the fact that the inception of this most astonishing scheme originated quite outside the United States. It is fostered and lobbied in Congress by an army officer whose assignment of duties would hardly cover the prosecution of claims against his own country, and openly by a resident of Mexico, who urges the injurious effect on his own fellow-citizens of impounding the flood waters at Elephant Butte as a reason why the citizens of New Mexico should be deprived of them.

BILL DOES NOT APPLY TO COLORADO.

It is admitted that if this bill is enacted it will not prohibit the further impounding of the waters of the Rio Grande in the State of Colorado. It is confined in terms to the river and its tributaries "in the Territory of New Mexico." But Colorado has, with its numerous ditches and reservoirs, practically absorbed all the water in that portion of the stream that lies within her boundaries. To such extent has she used these waters that the ancient ditches in the northern part of the Territory are practically without water, the owners have been ruined, and the settlement depending upon irrigation has been largely broken up. If the citizens of the Territory are now prohibited from any further use of the water, then the valleys along the whole stream from the north line to the south line will be practically a useless waste.

THE BUILDING OF THE DAM.

But the promoters of the scheme knew they could not invade a sovereign State with such legislation. They depend upon the plenary power of the Federal Government over the Territories. They invoke what they call the spirit of article 7 of the treaty of Guadalupe Hidalgo. Not its letter; not its obvious interpretation. They hold up the claims filed in the State Department by citizens of Mexico, claims asserted under the so-called spirit of said article, claims that are not worth the paper they are written upon and which would not be considered a moment by any international tribunal that could be assembled in all Christendom. And as a consideration for these preposterous paper claims, the bill proposes that the State Department shall (upon the gracious condition that the United States of Mexico will accept the same) proceed to build, wholly at the expense of the United States, what is courteously called an international dam and reservoir to cost

\$2,317,113.36, the waters, to be impounded thereby, to be forever thereafter distributed equally between said Republic of Mexico and the State of Texas.

This is such a wide departure from the ordinary use of the peoples' money, and from the ordinary lines of legislation, that it certainly deserves careful and conservative consideration.

As a rule, the Executive Department negotiates treaties under the authority of the Constitution and not the authority of Congress. And as a rule dams are built by the War Department. The Secretary of State, who is authorized, under certain conditions set out in section 2 of the bill, "to proceed with the construction of said dam and reservoir," is not supposed to be provided with the expert engineers and other facilities usually considered necessary for that character of work. It is, I think, entirely a new use to which it is proposed to put the Secretary of State. He may be a good dam builder, but he is not ordinarily appointed with reference to such qualifications. The suggestion may have got into the bill from the way of Mexico. It hardly originated in the brain of any American citizen.

THE SECOND SECTION.

But the second section not only proposes to put the Secretary of State to building dams, but it ties him up to plans and specifications not set out in the bill. Neither the committee nor the House will probably feel warranted in launching such a scheme at such expense, and for such purposes, without some familiarity with the plans and specifications alluded to. The bill says they are found in a document (Senate, 229) of the Fifty-fifth Congress. After some examination of that document, I am unable to find any plans or specifications for the enormous work proposed. There is a report (pp. 44, 45, and 46), made conjointly by an American and a Mexican engineer to the International Boundary Commission, which refers to certain exhibits, apparently containing some tentative plans. These exhibits are not found in Document 229, but there are attached to that document five maps of surveys made solely by Mexican engineers, showing the river and its shores in the vicinity of the proposed work. These maps are numbered from 1 to 5, and can hardly be the Exhibits A and B referred to in the report. But the report is interesting in several regards. After giving information under the heads "Location of the site of the dam" and "Developing thoroughly the bed rock," under the last head it concludes as follows:

While the evidence above is fairly conclusive, it does not furnish data sufficient on which to base working drawings and commence construction; many more borings are necessary to develop in detail the proposed site, and they should be sunk deeper into the rock.

This does not look like plans and specifications. In fact under the next subhead of this interesting report these engineers say that "on account of the lack of time and data, working drawings can not be submitted at this date." But they do say that they believe they have sufficient information on which to base a provisional estimate of cost. This estimate is then given in seven items, including an item of \$145,604 for "administration and contingencies." The whole estimate of cost

of structure, including the \$145,604, is put at \$1,117,000. This suggests that if the Secretary of State had at his disposal the amount provided for in the bill (\$2,317,113.36) that he might pull through, although he was not an expert in dam building.

A STARTLING PROPOSITION.

Now this report, which comes the nearest being "plans and specifications" of anything I am able to find in Document 229, has this as its subhead No. 4: "Map of land to be ceded to Mexico," following which is a detailed description of 98 acres lying in the Territory of New Mexico, which is to be ceded to Old Mexico as a part of this unique scheme. Of course, I can only suggest to the committee the importance of the proposition of ceding a portion of the domain of the United States to a foreign power, and raise the question whether or not the reference, in the proposed measure, to Document 229 would result in such a cession, or would commit our Government to a policy, or agreement, making such a cession necessary.

GENERALLY.

The bill aims to nullify the irrigation laws of New Mexico and the laws of the United States applicable thereto; to prohibit the construction of the dam and reservoir at Elephant Butte, and prohibit any further use of the waters of the river in the Territory.

Four acts of Congress are named which are to be "construed" as not applicable to New Mexico. But, in addition to these, it is seen that a whole body of laws relating to the use of nonnavigable waters for irrigation has grown up in this Territory, founded upon definite and explicit statutes of the United States and decisions of the Supreme Court, which are swept aside by the provisions of the bill.

It not only repeals and nullifies statutes and customs of long standing, but it works grievous injury to thousands of our own citizens. It would completely destroy the investment already made by the Rio Grande Dam and Irrigation Company—amounting, in construction and other necessary expenses, to several hundred thousand dollars. All the residents of New Mexico are opposed to it. The governor says it would deprive the Territory of its chief source of income and its main dependence for existence. (See address before Senate committee, submitted herewith.) It is a radical invasion of the existing policy of encouraging irrigation. In its possible reach, the principle of the bill threatens the business of irrigation everywhere. If Congress may step in and prohibit the use of water in New Mexico, it may do it in any other Territory. If it may do it in the Territories there is nothing to prevent it from applying the principle to the States, unless the courts protect them under some guaranties of the Constitution. But if Congress robs New Mexico of the use of the waters of the Rio Grande—so necessary to her life and prosperity—and allows Colorado to go without such prohibition, then it has made an invidious and indefensible distinction between citizens. The rights of Jones in New Mexico should be as sacred and thoroughly protected as those of Smith in Colorado.

And the only answer to all this, and the only reason for the drastic

provisions of the bill, is that owners of ditches in Old Mexico are not getting as much water as formerly, and that the spirit of the treaty of 1848 entitles them to one-half of the water gathered into the stream on American soil.

This reasoning is purely fanciful. There is no such spirit in the treaty. On the contrary, every rational interpretation is against it. It is the afterthought of parties in interest.

IN CONCLUSION.

It is true that the pending suit is nominally instituted to preserve the navigability of the Rio Grande. It is just as true that it was instigated by the friends of the international dam. The same parties who are now before your committee urging passage of this bill urged the suit. When I went before the Solicitor-General to urge that the first decision of the supreme court of the Territory dismissing the Government's bill should be permitted to become final, instead of dragging the defendants to the United States Supreme Court on appeal, I was met by General Mills in determined opposition, not in the interest of navigation, but avowedly in the interest of the international dam; and I personally know that Mr. Weber took the same kind of interest in the suit and for the same purpose. If the Elephant Butte project was destroyed the way would be open for the dam at El Paso. The parties pushing the latter scheme even furnished counsel at their own expense to assist in prosecuting the case in the Territorial courts. It goes without saying that none of this was done in the interests of navigation. It was a part of a deliberate and determined effort to destroy the dam and reservoir project at Elephant Butte.

Now, the decision of the United States Supreme Court was to the effect (1) that the river in New Mexico is not navigable; (2) that, without regard to any treaty, the company was authorized to construct its dam, provided it did it in such a way as not to substantially lessen the navigability of the stream for the short distance that it is nominally navigable near its mouth. Here is the last paragraph of the decision, embracing the final mandate of the court:

Without pursuing this inquiry further, we are of the opinion that there was error in the conclusions of the lower courts; that the decree must be reversed and the case remanded, with instructions to set aside the decree of dismissal and to order an inquiry into the question whether the intended acts of the defendants in the construction of a dam and in appropriating the waters of the Rio Grande will substantially diminish the navigability of that stream within the limits of present navigability, and if so, to enter a decree restraining those acts to the extent that they will so diminish.

Upon this mandate the case went back to the lower court, with instructions to ascertain whether the proposed dam and reservoir would substantially lessen the navigability of the river at the point where it was found navigable, which was from 900 to 1,000 miles below. The district court, after an exhaustive trial, where most of the facts, or alleged facts, presented on the part of the plaintiff were furnished by General Mills and his assistants, held that the proposed structure would not substantially lessen navigation, and a decree was entered accordingly. From this decree the plaintiff appealed to the supreme court of the Territory, which court unanimously affirmed the decision of the

district court. From this latter decision the case has been brought on appeal to the Supreme Court of the United States, where it is pending.

Now, is it not clear that the sole object of the pending suit is to destroy the Elephant Butte dam and reservoir? Is it not equally clear that one of the prime and necessary objects of the pending bill is also to break down the dam project?

Whether or not Congress will lend itself to aid in the objects here sought must be submitted, in the first instance, to this committee. I am quite sure on full investigation you will not recommend the destruction of the rights of our own citizens for the benefit of aliens, and will not appropriate from a common treasury \$2,317,113.36 to launch a project which in the end may cost five times as much and which is not for the benefit of all the people.

Very respectfully submitted.

J. H. MCGOWAN,

Attorney for Rio Grande Dam and Irrigation Company.

EXHIBIT A.

NEW MEXICO PROTESTS AGAINST BILL S. 3794.

GOVERNOR OTERO'S ARGUMENT BEFORE THE SENATE COMMITTEE ON FOREIGN RELATIONS.

MR. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: I appear before you representing the 200,000 people in the Territory of New Mexico, as well as the material interests of that great Territory which are vitally affected by Senate bill No. 3794, now under consideration. This bill is identically the same as that introduced in the House by Mr. Stephens, of Texas, and against the passage of which the people of New Mexico, in their legislature and in various political conventions, have entered their earnest protest. The same bill now appears, introduced by the honorable Senator from the State of Texas, and has been favorably reported by the Committee on Foreign Relations of that body, without any consultation with the people of New Mexico, or any attempt to get their views upon the subject, and indeed without their knowledge until the report of the committee was made public, on the 19th of last month.

New Mexico has for fifty years been the ward of this Government, and supposed to be by treaty stipulations and the relations existing between guardians and wards entitled to the fostering care of this great nation. But this bill, introduced in the Senate and recommended for passage, is calculated to deprive the Territory of its chief source of income and its main dependence for existence. Irrigation has been practiced in that Territory successfully for the last three hundred years. It was the first part of North America to be irrigated, and while the methods were crude, and the results most of them small, in the aggregate they have made the valley of the Rio Grande a succession of vineyards, orchards, and alfalfa fields for more than 200 miles along its borders.

This committee will observe that its report recommends in the fifth

paragraph, under the head of recommendations, found at page 5 of the report which is before you, that in the proposed treaty for the final settlement of all questions regarding the distribution of the waters of the Rio Grande, some way shall be provided with which to prevent the construction of any large reservoirs on the Rio Grande in the Territory of New Mexico, or, in lieu thereof, if that be impracticable, restrain any such reservoirs hereafter constructed from the use of any waters to which the citizens of the El Paso Valley, either in Mexico or the United States, have the right by prior appropriations.

It will be observed in this report that nothing is said in regard to the construction of such reservoirs in the State of Colorado, although in a previous portion of the report it is shown that a much larger amount of water is taken by that State than by the Territory of New Mexico. Thus it is proposed to absolutely prohibit any irrigation enterprises in the Territory of New Mexico at a time when this Government is being urged by the representatives from Colorado to appropriate \$12,000,000 for the construction of reservoirs in certain States named, this bill not including the Territory of New Mexico. With New Mexico a State, as of right it ought to be, no such proposition as this would for an instant be entertained by anyone, and I most respectfully submit that our very helplessness in the national councils should be a most potent argument for the national Congress to see that her present rights are not infringed upon or curtailed for the benefit or to the advantage of the great State of Texas, or our sister Republic on the south. Under the treaty of Guadalupe Hidalgo our citizens were forever guaranteed their rights of property as they existed at that time, May 30, 1848, and to the enjoyment of all the rights of citizens of the United States, according to the principles of the Constitution.

The report of the joint commission, which is made a part of your report on this bill, was made upon a wrongful assumption of the facts. After that date, the United States instituted a suit against the Rio Grande Dam and Irrigation Company to restrain it from constructing or maintaining a dam across the Rio Grande at a point about 100 miles north of the city of El Paso, Tex., where the boundary line between the United States and Mexico is the center of that stream. The defendants demurred to the bill, the demurrer was sustained in the district court; the United States took it to the supreme court of the Territory, which, on the 5th of January, 1898, sustained the district court. It was then taken by the Government to the Supreme Court of the United States, where, on the 22d day of May, 1899, the case was remanded, with instructions to order an inquiry into the question whether the intended acts of the defendants in the construction of the dam and in appropriating waters of the Rio Grande will substantially diminish the navigability of that stream within the limits of present navigability, and if so, to enter a decree restraining those acts to the extent that they will so diminish. This case is reported in 174 United States at page 690, in which Judge Brewer, delivering the opinion, says, at page 699:

I am not, therefore, disposed to question the conclusion reached by the trial court and the supreme court of the Territory that the Rio Grande, within the limits of New Mexico, is not navigable; neither is it necessary to consider the treaty stipulations between this country and Mexico.

In accordance with the mandate of the Supreme Court of the United States, testimony was taken for several weeks before Judge Parker at Las Cruces, near the Mexican border, and a large number of witnesses were examined with reference to the fact whether such a dam would substantially diminish the navigability of the Rio Grande within the limits of present navigability. All of this testimony was to the effect that such a dam as was contemplated would not have any effect in that direction, and the court so found. From this judgment of the district court the United States took an appeal to the supreme court of the Territory, which affirmed the judgment of the court below. Thereupon the United States again ordered an appeal to the Supreme Court of the United States, where it is now pending, and I submit to this committee that while the matter is sub judice, it would be highly improper for a coordinate branch of the Government, i. e., the legislative, to act in such a way as is contemplated by the bill in question.

The transcript of the record in that case contains an enormous amount of testimony from reliable parties upon the subject in controversy, to which I would invite the attention of the committee, as my time is too limited to read even a portion of it.

It will be observed that this "joint commission" earnestly recommends the construction of a dam across the Rio Grande at El Paso, at an expense of \$2,317,133.36, and the ceding by the United States to Mexico of a portion of the Territory of New Mexico, and that the Senate committee agrees in these recommendations in its report on this bill, while the United States, by its law department, has for more than four years past been endeavoring to prohibit the construction of a similar dam 100 miles north of El Paso, upon the ground that it would materially impair the navigability of that river at a point between 800 and 900 miles below El Paso, thus violating the provisions of the treaty of Guadalupe Hidalgo and impairing the contract entered into by that treaty between us and the Republic of Mexico. Just how the distinguished gentlemen on the commission and on the Senate committee arrived at the conclusion that an international dam at El Paso is demanded by the treaty of Guadalupe Hidalgo and will result in great benefit to both nations by the expenditure of more than \$2,300,000, while a similar dam constructed by private parties 100 miles above that point is a gross violation of treaty obligations and will seriously impair the navigability of the stream, is something about which I am not advised, and I desire and earnestly urge this committee to grant our people time in which to solve this problem and fully present arguments and facts to show the ruinous effect which the passage of this bill would have upon the industries of our people.

As I have stated before, the legislature of New Mexico, and its people in conventions, have most earnestly protested, in the name of justice and right, against the passage of the so-called Stephens bill, which is identical with the one under consideration. The legislature of that Territory assembles on the 21st instant, and immediately after its convening, one of its first acts will be to authorize the appointment of a nonpartisan committee to visit Washington for the purpose of presenting arguments and facts against the passage of this bill. Before 1850 New Mexico had been an outlying province of the Kingdom of Spain and the Republic of Mexico, neglected and uncared for by either Government, compelled to depend upon herself and her own

resources, to contend against an arid climate and the savage Indians within her borders. Since that time, she has had little from the National Government, but has conducted her own internal affairs, erected a capitol building, a penitentiary, university, agricultural college, school of mines, and normal schools entirely at her own expense. Our persistent endeavors to be admitted to the sisterhood of States have been ignored; both political parties and every legislature for the last twelve years have made the application in vain, notwithstanding we have more wealth and population than any of the recently admitted States of the Union. We bow with submission to this will of Congress, but we can not find words sufficiently strong with which to protest against this bill now pending before you, which deliberately proposes to cede a portion of our Territory, to prohibit the construction of reservoirs upon our principal stream, and deprive our people of using even the limited means at our command for purposes of agriculture. While we admit that Congress has the power to do all these things, as the guardian has the disposal of his ward's property, yet we protest against the right to exercise it, as taking away our property, not only without compensation, but actually inflicting an irreparable injury in addition to its loss.

EXHIBIT B.

EXTRACTS FROM LETTER FROM J. L. CAMPBELL, C. E., TO THE HON.
J. W. GRIGGS, UNITED STATES ATTORNEY-GENERAL.

In the matter of injunction in the suit of *The United States v. The Rio Grande Dam and Irrigation Company*, restraining the latter from constructing a storage dam and reservoir on the Rio Grande at Elephant Butte, New Mexico, * * * I wish to address you briefly.

The question at issue has been reduced to this, viz: Will or will not the construction of the proposed dam and reservoir at Elephant Butte materially impair the navigable capacity of the Rio Grande at and near the Gulf of Mexico (about 900 miles below the company's dam)?

This question has not been properly stated. It should be this: Will or will not the construction of the proposed dam and reservoir at Elephant Butte materially improve the navigable capacity of the Rio Grande at and near the Gulf of Mexico?

I submit, as self-evident, this proposition, viz: On torrential streams, discharging the greater part of the annual flow in a flood season of short duration, the construction of impounding reservoirs along their courses, the storage of the flood waters therein, and the gradual delivery back to the stream will inevitably tend to the establishment of a more uniform régime, reducing the flood heights when there is a surplus and raising the low-water stage when there is a deficiency.

The Rio Grande is such a stream, and the proposed storage at Elephant Butte is of the kind and, as far as it goes, will have the effect stated above, i. e., within the limits of the action of said reservoir it

will be a change from a raging torrent for about sixty days and a trickling stream or no flow for the balance of the year to a more uniform and serviceable flow throughout.

As a matter of fact, however, owing to the wide and shallow channel and limited flow in New Mexico, the annual flow of water is insufficient to make the river navigable there, and the reservoir is too remote from that section once actually navigated near the Gulf, some 800 or 1,000 miles away, measured along the river, to have any possible effect thereon.

This is conclusively established by the hearing of facts in the courts of New Mexico. It does not, however, disprove the statement made above that control of the water through storage tends to improve conditions for navigation.

Assuming for argument that any possible storage at Elephant Butte could affect the navigable capacity of the river near the Gulf, it follows that similar storage on the Pecos, Conchos, San Juan, and other important tributaries hundreds of miles nearer the navigable part of the river would have a more certain and positive effect. Indeed, those streams could be made to affect favorably the régime of the Rio Grande on the Gulf section. Their aggregate annual discharge is vastly greater and 400 to 700 miles nearer. They debouch upon the Rio Grande in short-lived but damaging torrents that rush to the sea and give no permanent addition to navigable capacity. It must be easily apparent to you that storage, in as far as it could be made to dissipate these floods into even, regular flow, would be beneficial to navigation.

Prohibition of storage of flood waters would be in diametrical opposition to a notable precedent already established by the United States in conserving the head waters of the Mississippi in the greatest artificial reservoirs in the world for the express purpose of improving the low-water navigation of that river. You will find an interesting reference to this and to a similar case on the Volga and Msta rivers of Russia in the report of Capt. Hiram M. Chittenden, Corps United States Engineers, published as Document No. 141 of the second session of the Fifty-fifth Congress, and in the annual reports of the Chief of Engineers, United States Army.

In both cases cited the primary object is to supplement low-water supply for navigation. An equally important incidental result on the Mississippi is some reduction of extreme flood heights in the lower valley, where the costly levee systems are taxed to the utmost limit.

On the Mississippi the reservation of water amounts to 93,400,000,000 cubic feet, estimated to raise the low-water stage 1 to 2 feet at St. Paul, 357 miles below.

On the Volga the reservation is 20,000,000,000 cubic feet and raises low-water stage as follows: 96 miles below, 2.8 feet; 212 miles below, 1.4 feet, and 410 miles below, 0.14 of a foot.

The proposed storage at Elephant Butte is but 11,000,000,000 cubic feet, while the section of river to be affected begins about 700 miles below.

If 93,400,000,000 cubic feet on the Mississippi raises the water 1 or 2 feet at 347 miles, and 20,000,000,000 on the Volga increases the stage 0.14 foot at 410, it is evident that 11,000,000,000 cubic feet on the Rio Grande, at the same distances, would, other things equal, have materially less effect, and at 700 miles none whatever.

But, in addition to this, other things would not be equal, and the differences are against the Rio Grande, owing to the relatively wide and shallow channel, and extreme aridity of soil and climate, whereby absorption and evaporation of the flowing water are exceptionally great. The total annual discharge of the Rio Grande at El Paso, 112 miles below Elephant Butte, approximates only 44,000,000,000 cubic feet. In the light of the figures given above, even the total flow in the latter case would have no appreciable effect on the Mississippi or Volga at a distance of 700 miles, and for the same reasons, in stronger degree, would have none on the Rio Grande.

There is no traceable connection between the floods of the upper and lower sections of this river. The flood seasons in each occur in the spring and summer, due in the former to melting snow in Colorado and New Mexico and in the latter to rains in the watershed in Texas and Mexico. The season of 1899 gave one of the highest and most destructive floods ever known in the lower valley, due to extremely heavy rains on the tributaries in Texas and Mexico. This had been preceded by a very light snow fall in Colorado and New Mexico, and at the time of the aforesaid flood and for a month previous and several subsequently the river bed at El Paso was dry, being in a year of exceptionally light flow in New Mexico.

Whatever the effect of the flood season in New Mexico on the river near the Gulf, please note that its longest duration is not greater than ninety days, during which fully 80 per cent of the annual flow passes, and of this 80 per cent at least 50 per cent goes in thirty days. From this it is evident that any possible effect is transient and of no essential value.

The position of the plaintiff in this case can not be maintained by proof that the condition of the river at Elephant Butte is material to navigation near the Gulf, and that the proposed storage of water would divert it permanently and prohibit its passage along the natural drainage.

But it is shown herein that the said condition is not material, and this disposes of the second point as one of no consequence.

Still it can be shown that there could be no permanent diversion from the natural drainage. The reservoir in question would simply stop the flood in its wild and less than useless career and release it again in a serviceable flow for irrigation in the valley. Undoubtedly there would be a marked temporary change in the first few years of irrigation, but water so used soon begins to find its way back into the natural drainage channel when used along same as in this case. This is a well-known fact in irrigation. Granting, however, there would be a real permanent loss from additional evaporation, due to retention of the water in the reservoir and subsequent distribution over the land, this loss would be only a fraction of that now due to the unrestrained escape of flood water. There is no escape from the conclusion that storage on a stream like the Rio Grande will save water and improve the régime. That it could be an impairment appears almost, if not quite, outside the possibilities of the case. As originally stated the question should be, Will there be material improvement? But such a proposition would afford no ground for the injunction proceedings, which were begun at the instigation and through the influence of parties having reasons other than the merits of the case. I am quite

aware that the Department of Justice has simply acted along and within the line of duty in the matter. If you have become familiar with the inner workings of this case, you have probably noted that the most determined opponents of the Elephant Butte Dam are the most earnest supporters of the proposed international dam at El Paso. They are, in fact, the only opponents, and, for some reason, conceived that the first project was a menace to the second; hence the pending suit. This is cited to show the animus in the origination of the latter.

The avowed object of the El Paso Dam is identical in substance and application with the Elephant Butte. On what score, then, can the nature of existing opposition to the latter be justified and how shall the Government itself be consistent in prohibiting the one and building the other? The simple truth is that our opponents are insincere champions of navigation on the Rio Grande, for they also propose to do the very thing condemned in us, relying on their abilities to "whip the devil around the stump" by a special act of Congress.

The people of New Mexico and Colorado are looking to the Department of Justice for justice, confident that such they will receive. In the meantime, they are suffering and desire a speedy termination of the suit.

EXHIBIT C.

MEMORIAL TO THE SENATE OF THE UNITED STATES IN RE BILL S. 3794, REPORT NO. 1755, CALENDAR NO. 1736, FIFTY-SIXTH CONGRESS, SECOND SESSION—HISTORY OF THE RIO GRANDE DAM AND IRRIGATION COMPANY AND THE ELEPHANT BUTTE DAM CASE—WITH ABSTRACTS FROM DECISIONS OF THE UNITED STATES COURTS RELATING TO THE USE OF WATERS OF NONNAVIGABLE STREAMS FOR IRRIGATION PURPOSES.

To the Honorable Members of the United States Senate.

GENTLEMEN: Your Committee on Foreign Relations, in its report as above, having recommended that bill S. 3794 be passed, I take the liberty, as a citizen of New Mexico (an integral part of the United States, denied for more than half a century a vote in Congress), whose Territorial rights are threatened, and as the largest holder of the debenture bonds of the irrigation company, whose legally acquired rights and valuable irrigation works the bill proposes to confiscate, of respectfully submitting the following particulars for your consideration:

The bill, like its counterpart (H. R. 9710, Fifty-sixth Congress, first session) introduced in the House by Mr. Stephens, of Texas, purports to be "A bill to provide for the equitable distribution of the waters of the Rio Grande between the United States of America and the United States of Mexico."

But the two general purposes of the bill are the reverse of equitable:

(1) To prevent an American company from constructing a storage dam on the Rio Grande at a point known as Elephant Butte, in Sierra County, N. Mex., about a hundred miles above El Paso, Tex., for the irrigation of lands lying wholly within the United States.

(2) To provide for the construction, by the United States, of an "international dam" across the river at a point in the canyon some 2 or 3 miles above El Paso, primarily in order to supply water to citizens of the Republic of Mexico, and secondarily for the irrigation of lands in Texas.

The bill also incidentally provides for the cession to the Republic of Mexico of certain lands now forming part of the Territory of New Mexico in order that the dam provided for under the bill may be strictly international, one-half in the United States of America and one-half in the United States of Mexico.

This proposal to build an "international dam," wholly at the expense of the United States, is based on the contention that Mexico is entitled to one-half of the waters of the Rio Grande above, as well as below, the point on the southern boundary of the Territory of New Mexico from whence the river becomes the boundary line between the two Republics.

For some years it has been claimed by the residents of that portion of old Mexico abutting on the southern boundary of the Territory of New Mexico and along the western bank of the Rio Grande that, owing to the appropriation of the waters of the Rio Grande for irrigation in Colorado and New Mexico, Mexico has been deprived of her proportion of the waters of the river, waters to which, it is alleged, Mexico is entitled under the provisions of article 7 of the treaty of Guadalupe Hidalgo of February 2, 1848; article 1 of the Gadsden treaty of December 30, 1853; article 3 of the convention of November 12, 1834, and article 1 of the convention of March 1, 1889. Consequent upon this alleged violation of treaty on the part of the United States, the late Mexican minister, M. Romero, filed a request with the State Department that the United States Government should prevent any further work on the Rio Grande by the Rio Grande Dam and Irrigation Company, a company regularly incorporated under the laws of New Mexico and engaged in carrying out a great irrigation system to supply water to several hundred thousand acres of fertile alluvial land in the Rio Grande Valley in the southern part of the Territory. Claims of citizens of Mexico for damages by reason of being deprived of the use of the waters of the Rio Grande for irrigation were also filed with the State Department, amounting in the aggregate to something over \$35,000,000.

Out of these proceedings on the part of the Mexican Government and its citizens a scheme was evolved and put forward whereby a treaty, a draft of which is now on file in the State Department, would be entered into between the United States and Mexico, under the terms of which the United States would undertake to build an "international dam," as now provided for in the bill S. 3794, in satisfaction of Mexico's claim.

Whether by treaty or under the principles of international law Mexico has any right to the waters of the Rio Grande where the course of that river (which is a nonnavigable stream, excepting for a short distance above its mouth, nearly a thousand miles below El Paso) flows wholly through United States territory, is a question I do not feel competent to express an opinion upon, but I beg to submit that there is at least one section in the pending bill which, if enacted by Congress, could not be enforced, as it is opposed to the spirit and letter of the Constitution. I refer to that section of the bill which is intended to destroy the water rights of the Territory of New Mexico and the vested rights and property of the Rio Grande Dam and Irrigation Company.

While Congress has power to regulate commerce with foreign nations, between the several States and with Indian tribes, and this power carries with it jurisdiction over navigable waters forming highways between States and between the United States and foreign

nations, the Federal Government has no jurisdiction over the non-navigable waters within the borders of any State, with two exceptions: (1) To preserve, so far as may be necessary, the navigability of navigable waters to which such nonnavigable waters contribute; (2) to preserve the riparian rights which citizens of the United States may have by reason of owning lands along the streams within such States.

THE RIO GRANDE DAM AND IRRIGATION COMPANY AND THE
ELEPHANT BUTTE DAM.

In order that the status of the above company in its relation to the bill in question may be understood, a brief history of Rio Grande irrigation and of what is known as the Elephant Butte Dam case should be taken into consideration.

Thousands of acres of the land in the Rio Grande Valley in southern New Mexico have been irrigated since the Spaniards first founded colonies in that part of "New Spain" over three hundred years ago, and since annexation to the United States a large area of the irrigable lands of the valley has been cultivated by American citizens. Flourishing towns have grown up, and the Mesilla Valley, the principal subdivision of the Rio Grande Valley, is now recognized as one of the finest fruit and vine growing sections of the United States. But owing to the torrential character of the Rio Grande it has heretofore been difficult to adequately irrigate more than a relatively small portion of the highly fertile lands along the river.

From time to time during the past twenty years and more various means of raising capital for the construction of a great storage dam to impound the flood waters of the river have been proposed by citizens of the Territory. Government aid has again and again been sought and investment of private capital solicited, but without avail. At one time the Federal Government appeared seriously to entertain plans, recommended by the Irrigation Bureau, for the construction of a series of storage dams. Reservoir sites on the Rio Grande were surveyed by Government engineers, who reported favorably on the proposition, and these sites were duly reserved, but nothing came of it, and ultimately they were thrown open for public appropriation (act of 1891) for reservoir purposes.

In 1893 the Rio Grande Dam and Irrigation Company was incorporated under the laws of New Mexico. All the requirements of the Territorial and Federal statutes were complied with in order to legally establish the reservoir rights essential to the company's undertaking; and as the then condition of the money market in this country rendered it impossible to raise, at anything but prohibitive rates, the large amount of capital required to carry out the proposed works, I personally, being largely interested in the company, went abroad with a view to placing the company's debenture bonds in Europe.

Unfortunately, the mistrust of American industrial securities, especially of irrigation securities, had become so universal that notwithstanding large sums were expended in properly presenting the enterprise to capitalists none would risk investment, although all admitted the obvious merits of the company's undertaking.

In England the directors of a public company are individually and collectively responsible to investors for good management, and finding that foreign investors would be more likely to intrust their money to an English board of directors, an English company was formed to issue 8 per cent preference shares and 5 per cent debenture bonds (the

former at par, the latter at a premium of 5 per cent), to be secured by a lease of the American company's undertaking. An exceptionally influential board, the members of which invested extensively in the enterprise, was secured, and largely on the strength of the high rank and representative character of the members of the board, the necessary capital was underwritten and subscribed—subject to calls to be made from time to time as the proposed irrigation works were proceeded with.

Col. W. J. Engledue, R. E., an authority on irrigation engineering, for many years identified with the imperial irrigation works in India, visited the Rio Grande Valley on behalf of the English investors, and carefully investigated the engineering features of the enterprise and the titles of the American company. Work on the proposed dams and canals was begun; a great colonization system was organized; branch offices and agencies were established in Great Britain and on the Continent, and the company's literature, descriptive of the climatic and other advantages offered to settlers in the valley and of the resources of the Territory, was printed in English and French and widely circulated; contracts for the sale of large blocks of land for fruit and vine culture were made, the company undertaking to provide water within two years; agreements were entered into with the owners of the community ditches in the valley whereunder the American company would concede water rights to the landowners along such ditches in exchange for the community ditches and for blocks of land, the farmers to pay an annual water rent of \$1.50 per acre for every acre irrigated. In fact, everything conducive to the colonization and development of the valley which good management could suggest and capital secure was provided for.

The landowners of the valley, to a man, favored the company's undertaking, as lands now practically valueless, or, where irrigated from the community ditches, worth but little more than a few dollars per acre, rapidly appreciated in selling value so soon as the company began work upon its canal system, large blocks being contracted for by subsidiary companies and sold to settlers at \$100 an acre. Widespread interest in the enterprise in particular, and the resources of the Territory in general, was aroused both in this country and in Europe, and thousands of applications for lands were being received at the London office when, without a word of warning, the Attorney-General, at the instigation of the promoters of the international dam scheme, instituted proceedings with the avowed intention of invalidating the company's rights and of confiscating the valuable works that were in course of construction.

INJUNCTION SUIT AGAINST THE RIO GRANDE DAM AND IRRIGATION COMPANY.

In the absence of any legitimate grounds for the action, it was based upon the preposterous allegation that the company's works would interfere with the navigation of the Rio Grande in New Mexico. Later the plaint against the company was amended, the items being:

(1) That the Rio Grande is navigable at Elephant Butte, New Mexico, where the company proposes to create its main storage reservoir, and that consequently the company's dam would violate the United States statute prohibiting obstructions in navigable waters.

(2) That if the Rio Grande is not navigable at Elephant Butte, yet it is navigable near its mouth (some 900 miles below), and that the company's dam would lessen the navigable capacity of the river at this lower point.

(Parenthetically it may be stated that this wonderful and valuable navigation interest the Department affects to safeguard (?) is represented by one old flat-bottomed river boat, the *Bessie*, which only draws 28 inches of water and which occasionally succeeds in making short trips up the Rio Grande above tide water.)

(3) That to dam the Rio Grande at Elephant Butte and use the waters for irrigation in the valley below would result in a violation of the treaty obligations due from the United States to the Republic of Mexico.

The Government's bill of complaint and the answer thereto necessarily raised the question of Mexico's claim against the United States (now amounting to over \$35,000,000) and the alleged *raison d'être* of an international dam at El Paso. The latter, strangely enough, the authorities seem to think could not interfere with the alleged navigability of the Rio Grande, and thus prejudice the sacred rights of the *Bessie*.

Bearing in mind that the Federal authorities have for years maintained, in opposition to Mexico's claim, that the Rio Grande is not a navigable stream, and that therefore the use of the waters of the river by American citizens in Colorado and New Mexico is not a violation of the Guadalupe Hidalgo and Gadsden treaties; that the late Attorney-General Harmon, in response to an official request for an opinion, had officially declared the river not to be navigable in the sense claimed; that engineers employed by the Government had selected reservoir sites on the Rio Grande for irrigation in New Mexico; that subsequently these reservoir sites had been thrown open for appropriation; that the company's selection of a reservoir site at Elephant Butte had been officially approved by the Secretary of the Interior, at whose request the company's plans had been slightly altered, the action of the Department of Justice in instituting proceedings, as above, was, to say the least, remarkable.

Correspondence on file in the Departments proves conclusively that when the supporters of the international dam project first sought to prevail upon the authorities to take action against the company the company's rights were declared by the then Attorney-General, the Secretary of the Interior, and others consulted to be unassailable. It was not until later that the Secretary of War was beguiled into stating that if the Rio Grande was a navigable stream in New Mexico the company's rights had not been properly acquired, inasmuch as his Department's consent to the impounding of the waters of the Rio Grande had not been sought and obtained. The United States Boundary Commission was referred to for information as to the navigability of the Rio Grande, and as Gen. Anson Mills, director of the United States Boundary Commission, was and is one of the principal promoters of the international project, the Department was promptly advised that the river is navigable in New Mexico, logs having been floated down the river many years ago when the stream was in flood.

Proceedings were consequently instituted, as above stated, to enjoin the company from completing its works, and in due course the case came on for hearing in the Third judicial district court of New Mexico. A vast amount of testimony was submitted on both sides, but the evidence was overwhelmingly against the Government. The court decided the case, with costs, in the company's favor and dissolved the injunction.

The Attorney-General then ordered an appeal to the Territorial supreme court, which court decreed as follows:

(1) Under the treaties with Mexico each Republic reserves all rights within its own territorial limits. This would have been so upon principles of international

law without such reservation. States lying wholly within the United States belong exclusively to it, and the soil within the United States is not burdened with a servitude in favor of Mexico in respect to any duty to so discharge the water as to promote or preserve the navigability of the Rio Grande.

(2) It is not the capacity of a stream to float a log or a rowboat which renders it a navigable river within the acts of Congress (1890 to 1892), but whether, at regular periods of sufficient duration and in its regular condition, its capacity is such as to be susceptible of beneficial use as a public highway for commerce. The Rio Grande in New Mexico is not a navigable river.

(3) The power to control and regulate the use of waters not navigable exercised by States and Territories in the arid West was confirmed by Congress by the act of 1866, and that power now resides wholly in such States and Territories under the act of 1877; and subsequently, therefore, the diversion of such local waters is not a violation of any act of Congress even though the navigable capacity at a distance below may become thereby impaired. (Vide transcript of record No. 753, supreme court of New Mexico, July term, 1897.)

These two decisions having been so decisively against the Government, it was naturally assumed that in view of the facts submitted in the case, which were wholly in the company's favor, the decision of the Territorial supreme court would be accepted as final. But the matter was allowed to drag on for months, greatly to the detriment of the company's works, which were being seriously damaged by floods, and then an appeal to the Federal Supreme Court was filed.

The people of the valley petitioned Congress, and urgent representations were made to the Departments, explaining the injustice that would be inflicted upon the company and upon the people of New Mexico if the completion of the works were further delayed by an appeal to the Federal Supreme Court. It was pointed out:

(a) That the plaintiffs have been twice defeated in their own tribunals;
 (b) That the delay that would be occasioned by an appeal to the Federal Supreme Court would leave costly unfinished works to be destroyed by spring floods, entailing enormous loss; and

(c) That the Treasury of the Government should not be used to crush legitimate private enterprise or to deprive citizens of New Mexico of their rights.

The Attorney-General, however, notwithstanding these urgent appeals, refused to drop the case, and on the 10th of October, 1898, the appeal to the Federal Supreme Court was heard. The court practically decided all points of law in the company's favor, but referred the case back to the lower court for inquiry as to the question of fact, viz, Would the company's works, if completed, "substantially" interfere with the navigability, "as at present existing," of the lower reaches of the Rio Grande—some 900 miles below? The court held that Federal jurisdiction could be exercised to prevent such use of the non-navigable waters of any State or Territory as would "substantially" lessen the navigability of navigable streams to which such waters are tributary; but that no authority, judicial or legislative, has ever intimated that Congress has power to say to Colorado: "You must not use the waters of the Rio Grande for mining and irrigation to the detriment of the mining and irrigation interests of citizens of New Mexico." The court in substance declared that Congress can not interfere with any use that any State may make of streams within its borders, unless such streams cross the State line and contribute to navigable waters below, and then only in the interests of navigation or to preserve its own riparian rights.

Justice Brewer, in this case (*U. S. v. Rio Grande Dam and Irrigation Company et al.*, 174 U. S., 690, *supra*), after stating the common law and defining the rights of riparian owners, declared:

While this is undoubted, and the rule obtains in those States in the Union which have simply adopted the common law, it is also true that as to every stream within

its dominion a State may change this common-law rule and permit the appropriation of the flowing waters for such purposes as it deems wise.

Again, he said:

Notwithstanding the unquestioned rule of the common law in reference to the right of the lower riparian proprietor to insist upon the continuous flow of the stream as it was, although there has been in all the Western States an adoption or recognition of the common law, it was early developed in their history that the mining industry in certain States and the reclamation of arid lands in others compelled a departure from the common-law rule and justified an appropriation of flowing water both for mining purposes and for the reclamation of arid lands, and there has come to be recognized in these States by custom and by State legislation a different rule—a rule which permits, under certain circumstances, the appropriation of the waters of a flowing stream for other than domestic purposes.

The court thus recognized the power of a State to change the common law with regard to the use of the water of nonnavigable streams, subject to two limitations:

First, that in the absence of specific authority from Congress, a State can not by its legislation destroy the right of the United States, as the owner of the lands bordering on a stream, to the continued flow of its waters: so far, at least, as may be necessary for the beneficial uses of Government property.

Second, that it is limited by the superior power of the General Government to secure the uninterrupted navigability of all navigable streams within the limits of the United States.

The Supreme Court has therefore clearly defined all constitutional limitations to the use of nonnavigable waters. The first relates to riparian rights which the United States may have as the owner of lands bordering on a stream, but, be it remembered, such riparian rights have been surrendered by direct legislation (acts 1866, 1877, 1891; R. S., 2339; 1 Supp. R. S., p. 137; R. S., pp. 249–251) in all the arid States; hence the first limitation may be considered as settled and disposed of.

The second limitation is based specifically and wholly upon the power of Congress to preserve the navigability of navigable streams, and it may be exercised for such purpose only.

The Federal Supreme Court having referred the question of fact back to the lower court for inquiry, the company, assuming that the findings of the court of inquiry would be accepted as final, and knowing, in view of the evidence that would be submitted, that the findings of the court must inevitably be in the company's favor, prepared to resume work at the earliest possible moment.

In December, 1899, the court of inquiry devoted some twelve days to the consideration of evidence as to the question of fact, and on the 3d of January following the court handed down its decision finding in the company's favor on all points and declaring that "the company's works would not interfere with the navigability of the Rio Grande."

The Government thereupon attempted to have the case reopened, but the court dismissed the application for a new trial. The Attorney-General then appealed to the Territorial supreme court, and on the 3d of May last this second appeal was heard, and again the lower court was fully upheld, the court in its decision even going to the length of implying that the attempt on the part of the Government to create and introduce fresh evidence as to the question of fact, with a view to having the case reopened, was unwarranted and without precedent. (See Appendix.)

Before the sitting of the court of inquiry, in December, 1899, an agreement was signed by the United States attorney and the two attorneys sent out by the Department of Justice, undertaking, in the

event of the Government appealing to the Federal Supreme Court, to expedite the hearing of such appeal in every way possible. This was over a year ago, but the Attorney-General did not order an appeal until just before the Presidential election; and this order was suppressed, for the time being, evidently for political reasons. In fact, our attorneys have not as yet received formal notice of appeal, and only learned of it through the United States attorney incidentally mentioning the fact in the course of conversation about a month ago. That this second appeal to the Federal Supreme Court can serve no proper end and has not been made in good faith must, it would seem, be obvious to any unbiased mind. I respectfully submit that the appended abstracts (Appendix hereto) from the decisions of the courts in this case justify the conviction that the litigation has been needlessly prolonged by appeals against the findings of the court of inquiry as to the question of fact.

SENATE RESOLUTION, FEBRUARY 22, 1898.

Something of the history of the attempts that have been made to destroy the franchise rights and to confiscate the property of the Rio Grande Dam and Irrigation Company may be gathered from Senate Doc. No. 229, Fifty-fifth Congress, second session. This document was compiled and transmitted to Congress in response to a resolution of the Senate of February 22, 1898, requesting the President—

If not incompatible with public interest, to transmit to the Senate the proceedings of the international commission authorized in the concurrent resolution of Congress of April 29, 1890, and a subsequent international convention between the United States and Mexico of May 6, 1896, and also the correspondence relating thereto with Mexico by the Department of the Interior, Department of War, and Department of Justice, as well as the Department of State, relating to the equitable distribution of the waters of the Rio Grande River, including the draft of an incomplete treaty between said Governments, negotiated between the late Secretary of State, Mr. Olney, on the part of the United States, and Mr. Romero on the part of Mexico, and all the correspondence between said officials relating thereto.

From the wording of this resolution it may be assumed that the Senate desired all the information obtainable in the Departments touching the subject, but it is obvious that the resolution and the resulting document (like the pending bill) were inspired and manipulated by the same parties responsible for the various attempts that have been made to deprive the people of New Mexico and Colorado of their legitimate right to the use of the waters of the Rio Grande, and in particular to destroy the legally acquired and vested rights of the Rio Grande Dam and Irrigation Company.

Although a considerable part of the Senate Doc. No. 229 above mentioned is devoted to correspondence more or less irrelevant to the subject, practically every paper that militates against the "international-dam" proposition was suppressed either in part or as a whole, while every paper favorable to the international-dam project and to Mexico's claim was included. It is no exaggeration to say that if the attorney of the Mexican Government had been handed the files of the Department from which to compile the response to the Senate resolution he could not have produced a document more favorable to the Mexican claim. Even Attorney-General Harmon's opinion, an authoritative and definite official statement, directly bearing on the subject, was entirely omitted.

BILL S. 3794.

Adverting to this bill (S. 3794), I would first point out that its title and preamble are along the same lines as the title and preamble of the concurrent resolution dated April 29, 1890, Fifty-first Congress, first session (referred to in the Senate resolution of February 22, 1898), which reads as follows:

CONCURRENT RESOLUTION Concerning the irrigation of arid lands in the valley of the Rio Grande River, the construction of a dam across said river at or near El Paso, Tex., for the storage of its waste waters, and for other purposes.

Whereas the Rio Grande River is the boundary line between the United States and Mexico, and whereas by means of irrigating ditches and canals taking the water from the said river, and other causes, the usual supply of water therefrom has been exhausted before it reaches this point where it divides the United States of America from the Republic of Mexico, thereby rendering the lands in its valley arid and unproductive, to the great detriment of the citizens of the two countries who live along its course; and

Whereas in former years annual floods in said river have been such as to change the channel thereof, producing serious avulsions and oftentimes and in many places leaving large tracts of land belonging to the people of the United States on the Mexican side of the river, and the Mexican lands on the American side, thus producing a confusion of boundary, and disturbance of public and private titles to lands, as well as provoking conflicts of jurisdiction between the two Governments, offering facilities for smuggling, promoting the evasion and preventing the collection of revenues by the respective countries; and

Whereas these conditions are a standing menace to the harmony and prosperity of the citizens of said countries and the amicable and orderly administration of their respective Governments: Therefore,

Resolved by the Senate (the House of Representatives concurring), That the President be requested, if, in his opinion, it is not incompatible with public interests, to enter into negotiations with the Government of Mexico with a view to the remedying of all such difficulties as are mentioned in the preamble to this resolution, and such other matters connected therewith as may be better adjusted by agreement or convention between the two Governments; and the President is also requested to include in the negotiations with the Government of Mexico all other subjects of interest which may be deemed to affect the present or prospective relations of both Governments.

This ill-constructed resolution is the only act of Congress which refers to the construction of a dam across the Rio Grande at El Paso. It is the only authority for the large expenditures which have been made to determine whether or not it is practicable to construct a dam at El Paso, and it is also the sole authority for the various and persistent attacks during the last five years upon the Rio Grande Dam and Irrigation Company.

As this concurrent resolution is the basis of bill S. 3794 and the Report No. 1755 thereon, it is proper to examine it somewhat critically. Although the report states that by the concurrent resolution Congress has provided for "a definite and authoritative ascertainment of the facts relating to the irrigation of the arid lands in the valley of the Rio Grande and the construction across the said river of a dam at El Paso, Tex.," it will be observed that the only reference in the resolution to a dam across the river is contained in its title. The subject is not again referred to either in the preamble or the body of the resolution. In fact, there is no "definite" direction to investigate the feasibility of a dam or its cost, and there is certainly no direction to construct a dam.

The first clause of the preamble declares, in substance, that by means of irrigating ditches and canals, taking water from the Rio Grande in the State of Colorado and in the Territory of New Mexico, the flow of the stream has become so diminished that the farmers

living below the southern boundary line of New Mexico, along the borders of the river in the State of Texas and in the Republic of Mexico, have been deprived of their usual supply of water for the irrigation of their lands.

The second clause of the preamble merely refers to the occasional changes in the course of the river, where it forms the boundary line between the United States and Mexico, owing to the floods causing avulsions and sometimes leaving large tracts of lands, belonging to the people of the United States, on the Mexican side of the river, or vice versa, and thus producing a confusion of boundary and a disturbance of public and private titles to lands, facilitating smuggling, and promoting the evasion and preventing the collection of revenues by the respective countries, etc.

Upon these two clauses the resolution (like the report of the Committee on Foreign Relations, which embodies the resolution) is built up. From any point of view this resolution must be considered unique and altogether *sui generis*; but taken by itself and analyzed, the resolution can hardly be held as an authorization to construct an international dam at El Paso, or to make expensive surveys and investigations to ascertain whether such a dam could be constructed, or to institute proceedings to prohibit the construction of dams above El Paso.

Doubtless the tyro in legislation who drafted the resolution had in mind the authorization of a treaty to provide for an international dam and the prohibition of any irrigation works above El Paso likely to render an international dam at El Paso unnecessary, but such authorization hardly would be looked for in the title of the resolution, and the authoritative part can be found only in its preamble where such preamble is referred to and made a part of the resolution proper.

Attention is specifically called to this resolution chiefly because its bungling terms evidence that it had its inception with parties not properly connected with Congress; that it was drawn by some hand unfamiliar with the making of laws, the same apparently responsible for the bill S. 3794, introduced by Mr. Culberson, and the House bill (H. R. 9710, Fifty-sixth Congress, first session) introduced by Mr. Stephens.

It will be noted that in the third clause of the preamble of the bill it is proposed by the Government of Mexico and the Government of the United States that the alleged deficiency in the flow of the Rio Grande shall be made good by impounding the flood waters of the river by means of an international dam and reservoir, but for the sake of argument, admitting the expediency of an international dam as a means of satisfying Mexico's claim against the United States, surely the rights of the people of New Mexico equally are deserving of consideration at the hands of Congress.

The bill purports to provide for the equitable distribution of the waters of the Rio Grande, but to deprive the people of New Mexico and Colorado of their inherent and justly inalienable right to the use of the waters of the Rio Grande for the irrigation of their lands in order to provide water for the Mexican farmers below can hardly be considered an equitable proposition.

The fourth, fifth, and sixth clauses of the preamble speak for themselves. The indirect reference to the Elephant Butte Dam as a "contemplated project" is, however, decidedly misleading. The Elephant Butte undertaking has long passed the contemplative stage. The fact is entirely ignored that already large sums have been expended on

the company's irrigation works, which, if completed, may be made to serve every purpose contemplated by the promoters of the international project, except the enrichment of the owners of the lands that would have to be condemned for reservoir purposes if a large storage dam were built at El Paso.

Mexico's claim can be satisfied, if need be, by water from the Elephant Butte Reservoir for a tithe of the cost of an international dam at El Paso, for the amount which is proposed should be appropriated for the international dam falls far short of the sum that would be required to build a large storage dam at any point in the El Paso Canyon. The engineers' report referred to in the concurrent resolution above quoted shows that suitable bed rock for a foundation was not discovered at a depth of over 90 feet, and to build a storage dam 90 or 100 feet high across a wide canyon and based on a foundation going down over 90 feet below the bed of the river would cost a great deal more than the amount it is proposed should be appropriated. Without suitable bed rock the construction of a large storage dam of the magnitude contemplated at the site suggested in the canyon above El Paso would be to court certain destruction for the thousands of inhabitants in the valley immediately below.

The last clause of the preamble of the bill is apparently intended to justify the two sections of the bill which follow. The first section is intended to provide a means of prohibiting the building of the Elephant Butte Dam. Although the bill proposes to inhibit the appropriation and storage of the waters of the Rio Grande or its tributaries in the Territory of New Mexico, there is not the slightest doubt that the provisions of this section are intended to apply specifically to the Elephant Butte Dam and Reservoir, as the Elephant Butte Dam site is practically the only feasible site for a large storage reservoir on the Rio Grande—that is, the only site where a large storage dam may be built with absolute safety and at a reasonable cost.

The second section of the act authorizes the Secretary of State to proceed with the consummation of the proposed treaty between the United States and Mexico; and then if Mexico will accept one-half of the water to be impounded in the proposed international reservoir in satisfaction of the pending claims above referred to, the Secretary of State is authorized to proceed with the construction of the so-called international dam.

The two propositions are novel, to say the least. First, the Secretary of State is authorized to proceed to make a treaty between our Government and a foreign power; second, he is further authorized to build a dam and create a reservoir at a cost of some millions of dollars.

THE PEOPLE FAVOR THE ELEPHANT BUTTE DAM.

The Elephant Butte enterprise is an undertaking that has the entire sympathy of the people of New Mexico, and, as a matter of fact, a large majority of the people of the city of El Paso also favor the building of the Elephant Butte Dam. Practically all of the citizens of El Paso, excepting those directly and indirectly interested in the lands that would be supplied with free water from an international dam or in the lands that would have to be condemned and paid for by the Government for reservoir purposes, appreciate and take into consideration the serious danger that a large storage dam just above the city would entail.

As evidence of the disposition of the people of El Paso I would state that in September last the El Paso Chamber of Commerce and its irrigation committee passed the following resolutions:

Resolved, That it is the sense of the El Paso Chamber of Commerce that no obstacle should be placed in the way of the project of the Rio Grande Dam and Irrigation Company, but, on the contrary, it should meet with all encouragement; and, furthermore, any enterprise that is intended to provide the people of the Mesilla Valley (the principal subdivision of the Rio Grande Valley in southern New Mexico) with a water supply should meet with the support of the people of El Paso; and

Be it further resolved, That in the matter of the suit now pending against the Rio Grande Dam and Irrigation Company it is the sense of the chamber of commerce that said suit should be speedily decided and all litigation pending that interferes with the building of said dam should be settled, and we favor such action by the proper authorities as will result in a prompt settlement of all pending litigation.

The resolution passed by the irrigation committee reads as follows:

Resolved, That this committee recommend that the board of directors of the chamber of commerce pass resolutions petitioning the State Department at Washington to request the Department of Justice to accept as final the decisions of the supreme court of New Mexico in the case of the Government against the Rio Grande Dam and Irrigation Company.

The disposition of the people of New Mexico in regard to the Elephant Butte undertaking is evidenced by the following quotation from the platforms of the Democratic and Republican parties as adopted in their respective conventions last October:

Republican.—We condemn the provisions of the so-called Stephens bill, now pending before the Congress of the United States, which bill, in terms, inhibits the people of this Territory from acquiring rights in the waters of the Rio Grande and its tributaries, such as can be and are now being acquired by the inhabitants of Colorado and Texas; which prohibits the use, impounding, and detention for legitimate commercial purposes of the waste waters arising in and flowing through New Mexico, and which removes from the jurisdiction of our Territorial courts litigation over the local rights involved in these momentous questions. We further favor the immediate construction of the Elephant Butte Dam.

Democratic.—We are unalterably opposed to the Stephens bill. We further condemn the antagonistic attitude of the McKinley Administration toward the irrigation interests of this Territory. We deprecate as wholly unwarranted the pernicious litigation that has for four years, despite five decisions against the Government, prevented the impounding of the flood waters of the Rio Grande at Elephant Butte for the irrigation of the farming lands of the Rio Grande Valley * * * thus discouraging private enterprise and driving capital from the Territory.

The Hon. M. A. Otero, governor of New Mexico, in his annual report to the Secretary of the Interior (1899) says:

The greatest setback New Mexico has ever had was that resulting from the stopping of work on what is familiarly known as the Elephant Butte Dam. The general plan * * * was to construct a mammoth dam at Elephant Butte, and form at this point the largest storage reservoir in the world. In addition to the large dam, a series of smaller ones were to be constructed, together with canals, and by this means bring under irrigation and cultivation hundreds of thousands of acres of the most fertile land on this continent. * * * Work was commenced in 1896, and continued until in 1897 the United States brought suit to enjoin the company from building the storage dam. Work had to be stopped, and that already done was left in such a condition as to be subjected to great damage by the annual floods. The ground for seeking the injunction was that the Rio Grande is a navigable stream.

This claim is preposterous. The Rio Grande is not, and never has been, a navigable stream, except where it is affected by the tide. The true secret of the attack can be found in the efforts to have constructed at El Paso an international dam. * * * It is to be hoped that this question will be shortly settled, and the company permitted to resume operations, for with the completion of this work will blossom forth one of the richest agricultural, fruit, and dairy sections in the West.

It will outrival California, and supply the East with a better quality of fruits and vegetables than can be produced in any other section of America.

Governor Otero's protest against the attacks on the Elephant Butte enterprise, like many similar protests communicated to the Attorney-General, was, however, ignored. Apparently the Government is determined that neither the natural rights of the people of New Mexico, nor the rights of the investors in the Elephant Butte enterprise are to be allowed to stand in the way of the international dam project.

As evidence of the sinister influence that has been at work in the promotion of the international dam scheme, I beg to quote the following from the El Paso Daily Herald (Republican), November 16, 1900. The Herald says:

When Gen. Anson Mills (director of the International Boundary Commission) went to the city of Mexico last month he went there to ask the secretary of state and President Diaz to continue their objections to the building of the Elephant Butte and other dams on the Rio Grande above El Paso.

Inspection of the correspondence on file in the Departments partially reveals the extent to which Gen. Anson Mills has been identified with the international dam scheme, and I venture to suggest that Gen. Anson Mills exceeds his duty as an officer of the United States Army, as director of the International Boundary Commission, and as a servant of the United States when he urges the government of a foreign country to instruct its minister at Washington to oppose the legitimate use by American citizens of the waters of an American river for the irrigation of American lands. I hold that I do not exceed my right or my duty as an American citizen when I protest against such conduct on the part of an American official.

Trusting that the Rio Grande Dam and Irrigation Company's undertaking to create the largest artificial lake in the world; to impound for the use and benefit of American citizens the flood waters of the Rio Grande; to make over half a million acres of land, now practically worthless, equal in value and productiveness to the best lands in southern California; to spend large sums in colonizing the Rio Grande Valley and in developing its splendid resources; to create a vast revenue-producing, tax-paying property, capable of providing prosperous homes for thousands of American families, may not be jeopardized by any act of your honorable body, and hoping that the defenseless condition of the people of New Mexico, so long denied a voice in the councils of the nation, will appeal to your consideration, I confidently leave the fate of bill S. 3794 to your sense of justice.

Your obedient, etc.,

NATHAN E. BOYD,

Director-General the Rio Grande Dam and Irrigation Company.

THE PORTLAND,

Washington, D. C., January 10, 1901.

APPENDIX.

ABSTRACTS FROM THE DECISIONS OF THE SUPREME COURT OF NEW MEXICO IN THE ELEPHANT BUTTE DAM CASE, WITH DECISIONS OF THE FEDERAL AND STATE COURTS CONCERNING THE USE OF THE WATERS OF THE ARID REGIONS FOR IRRIGATION PURPOSES.

Supreme court of New Mexico, July term, 1897. The United States (appellant) v. The Rio Grande Dam and Irrigation Company et al. (appellees). No. 753. Appeal from the third judicial district court.

This is a suit in equity brought by the United States to restrain the Rio Grande Dam and Irrigation Company from constructing or maintaining a dam across the Rio Grande, at Elephant Butte, in the Territory of New Mexico. * * *

The ground upon which the claim of the Government is predicated is that the Rio Grande is a navigable river, and that the proposed dam will obstruct the navigation of the river, the flow of waters therein, and interfere with its navigable capacity; and that such obstructions would be contrary to the treaty with Mexico, and in violation of the acts of Congress.

A preliminary injunction was granted, and the defendants ordered to show cause why it should not be continued. The defendants answered, denying that the Rio Grande is a navigable river, and also filed pleas justifying, under their right of way for canals and reservoirs secured under the act of Congress of 1891 and certain Territorial laws.

Upon the hearing, the court below held that upon the facts presented by affidavit, as well as other facts of which it took judicial notice, the Rio Grande is not a navigable stream within the Territory of New Mexico, and that the bill does not state a case entitling it to the relief prayed; and upon the complainant's declining to amend its bill further, the court dissolved the injunction and dismissed the bill. From that judgment the United States appealed to this court. * * *

Unless the Rio Grande is a navigable stream, and its "navigation" or "navigable capacity" will be obstructed by the proposed dam, the statutes do not apply to the case and can not be invoked to enable the Government to stop the progress of the work by injunction.

It is alleged in the original bill that the Rio Grande, from and including the site of the proposed dam, has been used to float logs for commercial and business purposes and for affording a means for commercial traffic within and between the Territory of New Mexico and the State of Texas and the Republic of Mexico. In the amended bill it is alleged that the said river is susceptible of navigation for commercial purposes up to Lajoya, in the Territory of New Mexico, about 100 miles above Elephant Butte. In both the river is alleged to be navigable at certain points below El Paso.

It is conceded that the navigability of waters is a matter of which courts take judicial notice. The record contains a large mass of information in the form of maps, reports of exploring and surveying expeditions made under the direction of the War and Interior Departments, and also reports of officers specially detailed to investigate the feasibility of rendering the river commercially navigable by improvements, and also its capability of supplying reservoirs for irrigation. From these and other data the following facts, as stated in the opinion of the court below, are well established. * * *

The course of the Rio Grande in New Mexico is through rocky canyons and * * * valleys over fine, light soil of great depth. * * * Only two instances were shown where the river was actually utilized for the conveyance of merchandise, and these were timbers; one of these instances occurred in 1858 or 1859, when a raft was sent down from Canutillo to El Paso, a distance of 12 miles; and the other recently, when some telegraph poles were floated from La Joya, a "short distance." * * *

From Bernalillo, N. Mex., to Fort Hancock, Tex., the Rio Grande is in the highest degree spasmodic, with immense floods during a few weeks of the year and a small stream during the remainder of it. (Tenth Annual Report Geol. Surv., p. 99.)

From personal observation, I know that these seasons of flood and drought (in the valley of the Rio Grande) were of about the same character thirty years ago. (Maj. Anson Mills, Tenth United States Cavalry, Rep. Spec. Com. Sen., vols. 3 and 4, p. 39.)

But, what is of more importance, we have the reports of officials upon the exploration of the river made under the direction of the Government for the special purpose of considering its navigability. From these it appears that—

The stream is not navigable, and it can not be made so by open-channel improvement. * * * Certainly there is no public interest which would justify the expenditure of the many millions of dollars which such an improvement would involve. The irrigation of the valley is a matter in which the inhabitants are most deeply interested, while the possible navigation of the river receives little or no attention from them. In my judgment, the stream is not worthy of improvement by the General Government. (Report of O. H. Ernst, major of engineers, to Secretary of War, 1889.)

Again:

I consider the construction, not only of an open river channel, but of any navigable channel, to be impracticable. During the greater part of the year, when the river is low, the discharge would be insufficient to supply any navigable channel, except perhaps a narrow canal with locks, the construction of which, on a foundation of sand in places 46 feet deep, would be financially, if not physically, impracticable. (Report of Gerald Bagnell, assistant engineer, to Secretary of War, 1889.)

The navigability of a river does not depend upon its susceptibility of being so improved by high engineering skill and the expenditure of vast sums of money, but upon its natural present conditions. In the case of the *Daniel Ball*, 10 Wallace, 557, the Supreme Court says:

Those rivers must be regarded as public navigable rivers in law which are navigable in fact, and they are navigable in fact when they are used or are susceptible of being used, in the ordinary condition, as highways for commerce over which trade and travel are or may be conducted in the customary modes of trade and travel on water.

In the case of the *Montello*, 20 Wallace, 431, the court says:

If it be capable in its natural state of being used for purposes of commerce, no matter in what mode that commerce may be conducted, it is navigable in fact and becomes a public highway. The vital and essential point is whether the natural navigation of the river is such that it affords a channel for useful commerce.

The court approves the language of Chief Justice Shaw in 21 Pickering, 344, who said:

In order to give it the character of a navigable stream, it must be generally and commonly useful to some trade or agriculture. (See also *Morrison v. Coleman* (Ala.), 3 L. R. A., 344.)

Of course it need not be perennially navigable, but the seasons of navigability must occur regularly and be of sufficient duration and character to subserve a useful public purpose for commercial intercourse. While the capacity of a stream for floating logs or even thin boards may be considered, yet the essential quality is that the capacity should be such as to subserve a useful public purpose. (Angell, *Water Courses*, 335.) In a recent case the supreme court of Oregon says, per Thayer, C. J.:

Whether the creek in question is navigable or not for the purposes for which appellant used it, depends upon its capacity in a natural state to float logs and timber, and whether its use for that purpose will be an advantage to the public. If its location is such and its length and capacity so limited that it will only accommodate but a few persons, it can not be considered a navigable stream for any purpose. It must be so situated, and have such length and capacity as will enable it to accommodate the public generally as a means of transportation.

And in the same case Lord, J., said:

It must be susceptible of beneficial use to the public, be capable of such floatage as is of practical utility and benefit to the public as a highway.

And of the stream then in question he says:

It is not only not adapted to public use, but the public have made no attempt to use it for any purpose. (*Haines v. Hall* (Oregon), 3 L. R. A., 609.)

The supreme court of Alabama says:

In determining the character of a stream, inquiry should be made as to the following points: Whether it be fitted for valuable floatage; whether the public or only a few individuals are interested in transportation; whether the periods of its capacity for floatage are sufficiently long to make it susceptible of use, beneficially, to the public. (*Roads v. Otis*, 33 Ala., 578; *Peters v. N. O., M. and G. R. Co.*, 56 Ala., 532.)

Indeed, in the letter of inquiry by the Hon. Richard Olney, Secretary of State, in respect to the facts as to the navigability of the Rio Grande, he says:

It should be remembered that a mere capacity to float a log or a boat will not alone make a river navigable. The question is whether the river can be used profitably for merchandise. I have been informed that wood is sometimes brought down the river to Ciudad Juarez in flatboats, and that logs are rafted or floated down from the timbered lands on the upper river for commercial purposes. (Letter, January 4, 1897.)

The Secretary of State seems to have been misinformed as to such use for commerce. This letter was addressed to Col. Anson Mills, at whose request it appears that application for right of way for irrigation by the use of the waters of the Rio Grande and all its tributaries was suspended throughout New Mexico and Colorado. The answer of Colonel Mills deals almost wholly with the river internationally; the river, in its relation to interstate commerce, is dismissed by him with the instance of the floating of a raft of logs in 1859 from a point 18 miles above El Paso, and the qualifying remark, "it would now hardly be practicable to do so." (Letter, January 7, 1897.)

It is particularly clear that the Rio Grande above El Paso has never been used as a navigable stream for commercial intercourse, in any manner whatever, and that it is not now capable of being so used. On the other hand, it has been, from the earliest times of which we

have any knowledge, used as a source of water for irrigation. The valley has always been the center of population in New Mexico. It was the first portion of this region to be occupied and settled by civilized man; and the population of this valley has always been and is now absolutely dependent for means of livelihood and subsistence upon the use of the waters of this river for irrigation of their fields and crops. Dams have been erected and maintained at El Paso for nearly two hundred years, by which the river has been obstructed and its waters diverted for irrigation to both sides of the Rio Grande. But never until the present time, so far as we can ascertain, has any question been raised by anyone as to interference with any use of the river for purposes of navigation. Indeed, it appears from the affidavits and reports presented in support of the bill in this case that the objection now raised to the construction of the defendants' dam grows out of the proposed construction of an international dam and reservoir at El Paso, to be constructed under the auspices of the two Governments.

The investigation of the feasibility of such an international dam and reservoir is being made on behalf of the United States under the authority of Congress, thus evincing the deliberate intention of the Government, by its political department, to take measures, not for the purpose of improving the navigability of this river, but of permanently obstructing it at a point far below the site of defendants' works, and thus to devote the stream to irrigation instead of navigation. One of the affidavits in support of the bill is made by the commissioner of the United States engaged upon this investigation, the object of which he states to be "the study of a feasible project for the equitable distribution of the waters of the Rio Grande to all persons residing on the banks or tributaries having equitable interests therein." And he also states in one of his reports that "the probable flow of water in the river here (El Paso) is likely to be ample for the supply of the proposed international reservoir, but that the flow will not be sufficient to supply the proposed international reservoir here and allow for the supply for the proposed reservoir of the Rio Grande Dam and Irrigation Company, at Elephant Butte, in New Mexico, or any other similar reservoirs in New Mexico, and but one of these schemes can be successfully carried out."

That is to say, in order to render feasible the storage of water for irrigation at El Paso, it is essential to prohibit all similar structures along the river at points above.

From these extracts it seems clearly apparent that the work at El Paso, to which the United States has committed itself tentatively, at least, is not designed to preserve or improve the navigability of the river, but to facilitate the distribution of the waters which may be gathered by obstructing the stream for the benefit of riparian occupants; and that the object of this proceeding is not to secure a public benefit from the navigation of the Rio Grande, but rather, under the guise of a question of navigability of the stream, to obtain an adjudication of the interests of rival irrigation schemes, in aid of one locality against another. Manifestly, neither the acts of Congress cited nor the provisions of the treaty have any application to questions of this kind, and they can not be invoked to settle conflicting local interests whose determination must necessarily depend upon entirely different considerations.

The Rio Grande, as we have said, flows through a region dependent upon irrigation. It is a part of what is known as the arid region of this country, embracing, according to the report of the Director of the

Geological Survey, about four-tenths of the entire area of the United States in which the rainfall is not sufficient for the production of crops. Here, the paramount interest is not the navigation of the streams, but the cultivation of the soil by means of irrigation. Even if, by the expenditure of vast sums of money in straightening and deepening the channels, the uncertain and irregular streams of this arid region could be rendered to a limited extent navigable, no important public purpose would be subserved by it. Ample facilities for transportation, adequate to all the requirements of commerce, are furnished by the railroads. * * *

But, on the other hand, the use of the waters of all these streams for irrigation is a matter of the highest necessity to the people inhabiting this region, and if such use were denied them it would injuriously affect their business and prosperity to an extent that would be an immeasurable public calamity. These conditions have been distinctly recognized in the legislation of Congress, for while it has refrained from any attempt to render streams like the Rio Grande navigable by artificial works, and has not in any way treated them as navigable waters, Congress has, by the reservation or survey of reservoir sites along its valley, and the appropriation of large sums of money for the prosecution of investigations and surveys to this end, clearly indicated its purpose to treat these waters as suitable only for irrigation, and to consider such a use of them as the one of commanding importance.

The riparian rights of the United States were surrendered in 1886 (R. S., 2339). Prior to that time it had become established that the common-law doctrine of riparian rights was unfitted to the conditions in the far West, and new rules had grown up under local legislation and customs more nearly analogous to the civil law. Recognizing that the public domain could not be utilized for agricultural and mining purposes without the use of water applied by artificial means, and that vast interests had grown up under the presumed license of the Federal Government to the use of such waters, Congress confirmed the rights of prior appropriations of waters by the act above mentioned, where the same "are recognized and acknowledged by the local customs, laws, and decisions of the courts." (Sec. 3339.) The Supreme Court of the United States, in passing upon this act, observes:

It is evident that Congress intended, although the language is not happy, to recognize as valid the customary law with respect to the use of the water which had grown up among the occupants of the public lands under the peculiar necessities of their condition. (*Atchison v. Peterson*, 20 Wall., 507; *Basey v. Gallagher*, 20 Wall., 671. And since 1870, patents for lands expressly except vested water rights.)

Congress has manifested a purpose to extend the largest liberty of use of waters in the reclamation of the arid region under local regulative control. Following in line with the act of 1866, the act of 1877 authorized the entry of desert lands in the arid region by those who intend to reclaim them by conducting water upon them. * * *

This act was limited to States and Territories in the arid region (1 Supp. R. S., p. 137). Colorado was included in 1891 (1 Supp. R. S., pp. 249-251). By the act of 1888 (an appropriation bill) an investigation was directed as to the extent to which the arid region might be redeemed by irrigation; it provided for the selection of sites for reservoirs for the storage and utilization of water for irrigation and the prevention of overflows, and that the lands designated for reservoirs, ditches, or canals, and all lands susceptible for irrigation therefrom

be reserved from sale or entry (1 Supp. R. S., p. 698). * * * On the 26th day of February, 1897, Congress opened the reservoir sites, reserved by the Government under the act of 1891, to private location, and the local legislators were authorized to prescribe rules and regulations and fix water charges. (Decision Interior Department, vol. 18, p. 168.)

Considering the discussions in Congress, the reports of committees, and the labors and reports of officials in the Interior and War Departments, made under Congressional directions, it seems quite manifest that the purpose by the Federal Government to hold and further redeem the great arid region had become the recognized policy. * * * It would appear that at first it was the design to establish and maintain an elaborate system of irrigation at public expense, but the immense cost of such an enterprise seems to have induced its abandonment temporarily, at least, and in its stead another system has been provided by irrigation at private cost. The system may be incomplete in many of its details, but such as it is, reservoir sites have been located, surveyed, and established along the streams, navigable and nonnavigable, under the immediate direction of Government officials and by authority of Congress; and the right to make private entries of others under the supervision of the Secretary of the Interior is also authorized.

Ruins of extensive irrigation systems of a prehistoric people, scattered all over New Mexico and Arizona, show that conditions which have confronted the present age were conditions encountered in the remote past and apparently overcome. The cultivation of the Rio Grande Valley by acequias from the river is mentioned by the earliest Spanish priests and explorers and is established by authentic historical memorials extending back more than two centuries. The law of prior appropriation existed under the Mexican Republic at the time of the acquisition of New Mexico, and one of the first acts of this Government was to declare that "the laws heretofore in force concerning water courses * * * shall continue in force." * * * In 1874 it was provided that—

All of the inhabitants of the Territory of New Mexico shall have the right to construct either private or common acequias and to take water for said acequias from wherever they can, with the distinct understanding to pay the owner through whose lands said acequias have to pass a just compensation for the land used. (C. L., sec. 17.)

In 1887 an act was passed giving authority to corporations to construct reservoirs and canals, and for this purpose to take and divert the water of any stream, lake, or spring, provided it does not interfere with prior appropriations. (Session acts, 1887, chap. 12.) Other acts have been passed since in regard to the acquisition of water rights. But this legislation is not peculiar to New Mexico. Its general characteristics are common throughout the West, where the doctrine of prior appropriation prevails. Thus was the character of local legislation, which Congress recognized, confirmed and authorized by the various acts to which reference has been made. The doctrine of prior appropriation has been the settled law of this Territory by legislation, custom, and judicial decision. Indeed, it is no figure of speech to say that the agriculture and mining life of the whole country depends upon the use of the waters for irrigation; and if rights can be acquired in waters not navigable, none can have greater antiquity and equity in their favor than those which have been acquired in the Rio Grande Valley in New Mexico.

It is contended that because the Rio Grande is capable of navigation to a limited extent several hundred miles below the point of the proposed dam its construction will, by arresting the flow of water in the stream, interfere with its navigable capacity, and that it is therefore prohibited by the act of 1890. From the foregoing discussion of the legislation of Congress and the conditions prevailing in the region under consideration it would seem to follow that if there were a conflict between the interests of navigation and agriculture in relation to a stream like the Rio Grande that of the latter would prevail. Certainly it should be held to be under the protection of the courts against any doubtful interpretation or application of a penal statute. If the waters of the Rio Grande are not navigable in New Mexico, which we hold to be the case, then they can not be said to be waters in respect of which the United States has jurisdiction. And certainly, in the absence of some express declaration to that effect, it can not be supposed that Congress intended to strike down and destroy the most important resources of this vast region in order to promote the insignificant and questionable benefit of the navigation of the Rio Grande for a short distance above its mouth.

For the construction contended for does not limit the prohibition of the act of Congress to the works proposed by the defendants. It applies to the maintenance as well as the original creation of obstructions. If defendants' dam at a point where the river is not navigable is an obstruction to the navigable capacity of the river several hundred miles below, the same must be said of every dam and irrigation ditch which diverts water from the river or any of its confluent at their primary sources. If upon this ground it is competent for the United States to prohibit the erection of defendants' dam, it is equally competent for it to compel the removal of every dam and head gate heretofore constructed on the Rio Grande and its tributaries, and prohibit the use of their waters for irrigation throughout this entire valley. * * *

In view of the condition and history of the region which would be affected, the unimportance of the Rio Grande as a waterway for commercial intercourse at any point, its nonnavigability at the place of the proposed construction and for hundreds of miles below, and the evident purpose of Congress by its legislation to promote irrigation throughout this portion of the country, even to the extent of further obstructions of this very stream, it would, in our opinion, be unreasonable to hold that legislation, which has a definite and well-understood purpose in furtherance of the public interest in these portions of the country to whose conditions it is applicable, was intended to operate to the detriment of the public interests in regions to whose conditions it is not applicable and where its enforcement would be destructive of the very interests which the legislation of Congress has otherwise undertaken to promote.

We therefore hold that the work sought to be enjoined in this action is not in violation of any law of the United States or any treaty, and that the judgment of the district court dissolving the injunction and dismissing the bill should be affirmed, and it is so ordered.

THOMAS SMITH, *Chief Justice*.

I concur in the conclusion reached.

N. B. HAMILTON, *A. J.*
N. B. LAUGHLIN, *A. J.*

Supreme court of New Mexico, January term, 1900. The United States, appellant, *v.* The Rio Grande Dam and Irrigation Company et al., appellees. No. 879. Appeal from the Third judicial district court (as to question of fact).

The judge of the court of inquiry, after giving an exhaustive summary of the evidence submitted as to the question of fact, said:

I find that the intended acts of the defendants in the construction of a dam or dams, or a reservoir, and in appropriating the waters of the Rio Grande, will not substantially diminish the navigability of that stream within the limits of the present navigability.

The judges of the Territorial supreme court, in handing down their decision in the appeal against the findings of the lower court, state:

We have examined the record, which is very voluminous and shows that the whole matter was thoroughly gone into, and we conclude that the facts as set forth in the findings of the learned judge below are sustained by the evidence, and we adopt same as the findings of this court.

The lower court in the finding of fact found that the proposed acts of the defendants will not substantially diminish the navigable capacity of the Rio Grande within the present limits of navigability. It seems clear to this court (the Territorial supreme court) that the appellant utterly failed to establish the fact that the proposed acts of the defendants would have the effect alleged upon the Rio Grande. * * *

It must follow as a natural consequence upon the finding that the proposed acts of the defendants will not impair the navigable capacity of the Rio Grande that the appeal should be dismissed. The only purpose of the appeal was to enjoin such acts of the defendants only so far as they might affect that result.

The proposition submitted in support of the application for a rehearing is a proposal not to produce evidence which already exists, but to create evidence not existing at the time of the trial or of the application. We think no sufficient diligence has been shown by the Government in this case in regard to this evidence. From the time of the issuing of the mandate by the Supreme Court of the United States remanding this case for investigation the Government took no steps whatever to furnish this evidence. It is not shown in the application why no such steps were taken.

Even during the trial of this case it must have been as much apparent to counsel for the Government that this testimony was required to support the appeal as it was after the finding of fact came from the trial judge. No mention of the same was made or any application presented to the court at that time. Again, it is not shown by this application that the result of any such proposed investigation would change the conclusion reached in this case. The Government simply asks that this case be reopened for the purpose of permitting it to make an experiment which it should have made before that time, and the result of which no one undertakes to foretell. * * * We know of no rule, taking into account even the great public importance of this case, which would authorize this court or the court below to reopen the case under such circumstances. (See *Rogers v. Marshall*, etc.; *Burrows v. Ween* was a case of the trial by the chancellor, as this was, and a similar application was made and denied.)

The refusal of the court (the lower court) to find the ultimate fact in this case in favor of the Government was, as we have before stated, in full accord with our view of the testimony in this case, and was therefore correct. We find no error in the record, and the decree of the lower court will be affirmed, and it is so ordered.

WILLIAM J. MILLS, *Chief Justice*.

We concur.

JOHN R. MCFIE, A. J.
J. W. CRUMPACKER, A. J.

LAWS OF THE UNITED STATES RELATING TO THE USE OF WATER FOR IRRIGATION.

Prior to 1866 various States and Territories west of the Mississippi had enacted laws regulating the use of waters in the streams and lakes

for mining and agricultural purposes. All these laws were based on the theory that the first appropriator was entitled to the water, or so much as was necessary for his purposes. The following statutes of the United States directly affirm this State and Territorial legislation and encourage the use of the waters for such purposes, and especially for the purpose of irrigation:

SEC. 2339. Whenever, by priority of possession, rights to the use of water for mining, agricultural, manufacturing, or other purposes have vested and accrued, and the same are recognized and acknowledged by the local customs, laws, and the decisions of courts, the possessors and owners of such vested rights shall be maintained and protected in the same; and the right of way for the construction of ditches and canals for the purpose herein specified is acknowledged and confirmed; but whenever any person in the construction of any ditch or canal injures or damages the possessions of any settler on the public domain, the party committing such injury or damage shall be liable to the party injured for such injury or damage. (Rev. Stat., 429.)

SEC. 2340. All patents granted or preemption or homesteads allowed shall be subject to any vested and accrued water rights, or rights to ditches and reservoirs used in connection with such water rights, as may have been acquired under or recognized by the preceding section.

Nineteenth Statutes, 377 (Sup. 2d ed., 137, 1887).—"An act to provide for the sale of desert lands," etc., which, after providing in the first section a method by which said lands might be filed upon and water conducted upon the same for irrigation purposes, there follows this proviso:

Provided, however, That the right to the use of water by the person so conducting the same on or to any tract of desert land of 640 acres shall depend upon bona fide prior appropriation; and such right shall not exceed the amount of water actually appropriated and necessarily used for the purpose of irrigation and reclamation; and all surplus water over and above such actual appropriation and use, together with the water of all lakes, rivers, and other sources of water supply upon the public lands and not navigable, shall remain and be held free for the appropriation and use of the public for irrigation, mining, and manufacturing purposes, subject to existing rights.

This statute was specifically made applicable to California, Oregon, Washington, Idaho, Montana, Utah, Wyoming, Arizona, New Mexico, and Dakota. Afterwards, in 1891, it was made applicable to Colorado. (Sup. 2d ed., 941.)

Twenty-fifth Statutes, 526.—Congress in the sundry civil bill provided for the survey of reservoirs and canal sites, and for reserving from sale all such sites and all lands that would be watered by such reservoirs, and appropriated \$100,000 therefor. (Also see Sup. 2d ed., 626.)

Twenty-fifth Statutes, 960.—Congress again provided in the sundry civil bill for investigating the extent to which the arid region of the United States can be redeemed by irrigation and the segregation of irrigable lands in such arid region, and for the selection of sites for reservoirs and other hydraulic works necessary for the storage and utilization of water for irrigation, and made an appropriation of \$250,000 to pay the expenses.

26th Statute, 391.—Here Congress again, in the sundry civil bill, legislated with reference to the question of irrigation, and repealed the act providing for the withdrawal from entry of lands in the vicinity of reservoir sites, except that the reservoir sites themselves, theretofore located or selected, should remain segregated and reserved from entry or settlement, as provided by law, and reservoir sites thereafter located or selected on public lands should in like manner be reserved from the date of location or selection thereof.

26th Statute, 1101.—Congress restricted the reserves about reservoir sites to the land necessary for the reservoirs.

28th Statute, 422-423.—Appropriates desert lands to the various States and Territories on certain conditions of reclaiming the same by irrigation, the aggregate amount not exceeding 1,000,000 acres, being section 4 of the sundry civil bill of August 18, 1894.

28th Statute, 635-636.—This is an act authorizing the use of public lands for reservoirs and canals, giving 50 feet on either side of the same.

29th Statute, 484.—An act providing for reservoirs on the public lands by persons or corporations engaged in breeding live stock, etc.; reservoirs not to exceed 160 acres.

29th Statute, 599.—All reserved reservoir sites are by this act thrown open to appropriation by individuals, corporations, and States, under the act of March 3, 1891, limited by the following proviso:

Provided, That the charge of water coming in whole or part from reservoir sites used or occupied under the provisions of this act shall always be subject to the control and regulations of the respective States and Territories in which such reservoirs are in whole or part situate.

SUPREME COURT DECISIONS.

The Supreme Court has also rendered a number of decisions upholding as valid and proper the local laws and customs regulating the appropriation of water in the arid States.

In *Atchison v. Peterson* (20 Wal., 507) the court decides that prior appropriation of running waters for mining purposes gives the better right to their use.

In *Basey v. Gallagher* (20 Wal., 670) the court quotes section 2339, Revised Statutes, and recognizes as valid the customary laws with respect to the use of water which has grown up among occupants of public lands under the peculiar necessities of their condition. It also declares the act (sec. 2339) is applicable to the use of water for irrigation. The water in this case was taken from Avalanche Creek, near its junction with the Missouri River, and thus formed a part of the upper waters of the Missouri, and theoretically contributed to the navigability of the river at points below where it was navigable. (See also *Jennison v. Kirk*, 98 U. S., 453; 25 L. Ed., 240.)

In *Broder v. Natoma W. and M. Co.* (101 U. S., 274; 25 L. Ed., 790) Justice Miller delivered the opinion of the Supreme Court in the following language:

We are of opinion that it is the established doctrine of this court that the rights of miners, who had taken possession of mines and worked and developed them, and the rights of persons who had constructed canals and ditches to be used in mining operations and for purposes of agricultural irrigation, in the region where such artificial use of the water was an absolute necessity, are rights which the Government had, by its conduct, recognized and encouraged and was bound to protect before the passage of the act of 1866, and that the section of the act which we have quoted was rather a voluntary recognition of a preexisting right of possession, constituting a valid claim to its continued use, than the establishment of a new one. This subject has so recently received our attention, and the grounds on which this construction rests are so well set forth in the following cases, that they will be relied on without further argument: *Atchison v. Peterson*, 20 Wall., 507 (87 U. S., XXII, 452); *Forbes v. Gracey*, 94 U. S., 762 (XXIV, 313), *Jennison v. Kirk* (ante, 240).

DECISIONS OF STATE COURTS.

In addition to the authorities above cited there are numerous State decisions, all to the same effect. These have been collected and grouped under the subtitle "Appropriation" on page 6 of a pamphlet entitled "A digest of the decisions of the supreme courts of the States and Territories of the arid region, of the United States circuit and Supreme Courts, in cases involving questions relative to the use and control of the water in that region." This pamphlet was compiled by D. W. Campbell, esq., of the United States Geological Survey, and revised and edited, under the direction of the Secretary of the Interior, by W. C. Pollock, esq., of the Assistant Attorney-General's Office for the Interior Department. It is a Government print of 1889.

34 VICTORIA STREET, WESTMINSTER,
London, December 14, 1897.

Hon. ALVEY A. ADEE,
Acting Secretary, State Department,
Washington, D. C.

SIR: I beg to acknowledge the receipt of your favor of the 3d instant, and have to thank you for your courtesy in affording me the information therein contained.

I note with much satisfaction that the Attorney-General is endeavoring to obtain an early hearing of the Rio Grande appeal case, as the failure to accept as final the decision of the Territorial supreme court, dismissing the injunction against the company, is adding materially to the losses sustained by my company in consequence of your Government's attempt to invalidate the valuable rights and privileges conceded to the Rio Grande Dam and Irrigation Company by the Federal authorities under Mr. Cleveland's Administration; rights subsequently acquired by the Rio Grande Irrigation and Land Company, Limited.

I may, perhaps, be permitted to state that the right (now controlled by my company) to impound and appropriate the flood waters of the Rio Grande for irrigation purposes having been legally acquired by the Rio Grande Dam and Irrigation Company under the Territorial laws of New Mexico and under the Federal statutes, rights formally approved by the late Secretary of the Interior, my board are wholly at a loss to understand the attempt now being made by the State Department to invalidate our rights and confiscate the valuable works on the Rio Grande carried out with friendly British capital.

I inclose copy of my speech, delivered, as chairman of the board of directors of the English company, at the statutory general meeting of the shareholders, held under the acts on the 3d instant, from which you will perceive that in explaining to the shareholders of the company the action of your Government I have endeavored to justify to the public our belief that your Government is not antagonistic to British capital, nor opposed to our plans for the colonization and development of the Rio Grande Valley.

Again thanking you for the courtesy of your reply,

I am, yours, respectfully,

W. J. ENGLEDEUE,
Colonel, Chairman.

NO REAL CAUSE FOR COMPLAINT.

IRRIGATION TENDS TO INCREASE THE RIO GRANDE WATER FLOW—MEXICO SHOULD BE GRATEFUL INSTEAD OF TRYING TO KICK UP A ROW OVER IT—RESULT OF THE EXPERT PERSONAL EXAMINATION OF PROFESSOR CARPENTER.

L. G. Carpenter, meteorologist and irrigation engineer of the agricultural college at Fort Collins, was in the city yesterday. Professor Carpenter has been for some time engaged in measuring the waters of the streams of Colorado from which water is taken for irrigation purposes, and last year made a careful examination of the Rio Grande River in the San Luis Park, a matter of considerable importance at this time, in view of the position taken by the Mexican Government, to the effect that the use of the waters of that river for irrigation in Colorado and elsewhere has caused the lowering of the water in the navigable portion of the river in which Mexico has an equal interest with the United States, and that in so doing the United States has violated the treaty, under the terms of which the United States is pledged to do nothing that will interfere with the navigation of the river.

"I don't know that I am prepared to make any definite statement on this question," said he, "as we have not yet completed our investigations. We took the measurements of the water flow of the Rio Grande last year, but we are only just about to commence this season, and therefore can hardly say definitely to what extent the use of the water in the Rio Grande for irrigating purposes affects that portion of the river that can be navigated.

FROM GENERALITIES TO PARTICULARS.

"Applying the information obtained from experiments in other places, however, I am inclined to think that the claims of the Mexican Government are not based on very substantial foundations. Of course the Mexican Government has certain vested rights in the waters of the Rio Grande, and our Government is under treaty obligations to protect those rights, but I do not think that there is enough water taken out for irrigation to seriously affect the navigation of the river.

"The records show that when the Rio Grande is low the other waters of the United States are low. There has been no high water in Colorado since 1884, when the water in the Lower Rio Grande was very high. Since that time the waters of all Western rivers have been low until this year, and the Rio Grande River was higher this year than it has been for many years. The claim of the Mexican Government is that the low water since 1884 is due to irrigation, because irrigation first became general in that year in the upper valley of the river; but it is by no means clear to me that this position can be sustained, as similar conditions existed in other streams not seriously affected by irrigation.

"It has been definitely determined that the return to the river bed by seepage is about 30 per cent of the water taken out, the rest being lost by evaporation, by absorption of the growing crops, and by the formation of underground reservoirs. The latter cause of loss is but temporary, however, for when the underground basins are once filled up the water naturally once more seeks its ordinary channel. I think that so far from irrigation being detrimental to the supply of water in the lower portion of streams, it is likely to prove beneficial in this way: It absorbs a large portion of water from floods, and when the basins I have referred to are filled up the flow of the streams becomes steadier.

UNDERGROUND BASINS.

"The extent and depth of these basins for the reception of water beneath the surface are somewhat surprising. For instance, in the San Luis Park there is a large area, the full extent of which has not yet been determined, that is gradually filling up with water, which rises to a point so near the surface that eventually the entire area over this basin will be cultivated without surface irrigation. At some points in this tract where water was not reached formerly at a depth of 1,000 feet it is now found at a comparatively shallow depth. The surface of the bed rock generally slopes away from the river, and it naturally follows that when the basin is filled with water to the rim of bed rock it will overflow into the river. The same phenomenon is observed in the valley of the Cache la Poudre, where wells which when dug found water at a depth of 40 and 50 feet now have water within from 5 to 10 feet of the surface. Of course, in the case of the Rio Grande, when this basin is filled to within a short distance of the surface irrigation will practically cease and the volume of water which passes down the river will be proportionately increased.

"Observations in other parts of the world are to the same purpose. When the Gauges Canal was constructed H. G. McKinney says the whole available cold-season supply was taken from the river; yet at a distance of only a few miles the discharge in the river was found to be very considerable, and farther on it increased to such an extent that the supply taken by the canal was very little missed. In the canals taken from the Ticino River, in Italy, for irrigation, the volume of water is very great, and yet the return water to the river is so extensive that the loss is not large enough to be perceptible, though the soil is very light and porous.

BENEFICIAL RESULTS.

"The results of careful investigations on this question of seepage show that there is a real increase in the volume of the streams as they pass through the irrigated sections; that there is no such increase as they pass through the unirrigated sections; on the contrary, there is an actual loss, even when the drainage of a large area enters, and that the increase is more as the irrigated area is greater. Only where the lands are already saturated is the rainfall sufficient to cause seepage from the outlying lands to reach the river. This fact has an important bearing upon the question involved in the irrigation of the Rio Grande Valley, as it will be necessary for it to completely fill the great basin mentioned before it will perceptibly increase the water in the river flowing through the irrigated section. Ultimately the returns from seepage will make the lower portions of the river valleys more certain of water and cause a greater regularity of flow. If the results of this investigation apply to the Rio Grande, then any injury must be largely compensated by the return and the greater regularity of flow produced in the river.

"In the absence of any determination of the definite flow and of the seepage of the Rio Grande I can, of course, give an absolute opinion on the subject of the injury to Mexico. The conclusions given on the question of seepage have been reached by experiments in other localities. I can see no reason why the same results should not follow the investigations of the conditions of the Rio Grande Valley, and if they do I think the opinion will be justified that Mexico has no serious cause of complaint."—From the Denver Republican, Denver, Colo., July 4, 1897.

RIO GRANDE IRRIGATION.

PROBABLE SETTLEMENT OF THE IRRIGATION DIFFICULTIES WITH MEXICO BY A SUBSIDY.

The ordinary general meeting of the Rio Grande Irrigation and Land Company, Limited, was held yesterday at the Westminster Palace Hotel, Victoria street SW., Col. W. J. Engledue (the chairman of the company) presiding.

The secretary (Mr. A. Simpson Slater) having read the notice convening the meeting, the chairman said:

"This meeting has been called merely in order to comply with the requirements of the acts, but as the position of the United States Government and the Government of Mexico relative to the company, and the exact nature of the company's valuable rights and privileges may not be perfectly clear to some of you, I purpose making a few remarks in explanation. As stated in the prospectus, the company was formed to acquire the franchise rights, water rights, rights of impounding and appropriating for irrigation and other purposes the waters of the Rio Grande, the properties and undertaking of the vendor company, and for the purpose of colonizing and irrigating the lands in the Rio Grande Valley.

"Now, as the amount of fertile alluvial lands capable of being irrigated by the company's canals, when completed, will only be limited by the flow of the Rio Grande, which is one of the largest of the North American rivers, and deservedly called the American Nile, it is not difficult to estimate the value of the important rights and privileges controlled by this company. It must be borne in mind that the Rio Grande provides the only possible means of irrigating a vast area of alluvial land of exceptional fertility, and that the character of the soil and climate of the Rio Grande Valley makes it one of the finest fruit and vine growing districts in the world; that the valley is 1,200 miles nearer than California—heretofore the great fruit-producing State of America—to Chicago and the Eastern markets; and that fruit grown in the Rio Grande Valley matures several weeks earlier than in California. The soil and

climate of the valley are as near perfection as anything in this world can be, and as there is almost no rainfall to speak of, cultivation of the soil is impossible without water artificially applied."

When you take into consideration the climate, soil, and central location of the Rio Grande Valley, the fact that the population of the United States is increasing at the rate of over 5,000 a day, that the company practically controls the entire flow of the Rio Grande in southern New Mexico, and that it is estimated that this great waterway is capable of providing water for the irrigation of considerably over 1,000,000 acres, the great and permanent value of the company's property and exceptional rights can hardly be overestimated. The Egyptian Nile only irrigates at present 5,000,000 acres, and Egypt supports a population of nearly 8,000,000 souls. Shortly after the company went to allotment I, at the request of my codirectors, proceeded to America to confer with the company's chief engineer and make all necessary arrangements for carrying out the proposed works on the Rio Grande, and as a result of my personal inspection of the soil and topography of the valley I am in a position to state that the value of the company's property has not been exaggerated nor the cost of completing the whole of the company's proposed works underestimated. In fact, the topography of the country is such that it is no exaggeration to say that nature has all but provided a complete irrigation system, only the construction of comparatively inexpensive dams and canals remaining for the hand of man to carry out. In other words, the lay of the land, the fall of the river, the solid rock foundations for our principal dams, weirs, and ditch heads are all that can be desired.

By consulting the map you will see that the Rio Grande Valley proper is divided into four main subdivisions, locally named the Paraiso, Rincon, Mesilla, and El Paso valleys, and that at the head of each of these subdivisions the river flows for some considerable distance through a narrow rocky canyon or channel. These natural channels render the cost of damming and impounding the waters of the river and the construction of permanent ditch heads infinitely less than would be possible in any other part of the world that I know of, and as a colonel of the royal engineers many years in India I am familiar with works of this description. These narrow gorges, where the river has cut its way through solid rock formations, enable us to build our dam and weirs and ditch heads at a minimum cost, while the character of the soil and level, rolling plains of the valley likewise reduce to a minimum the cost of canal construction for irrigation.

That I may more fully illustrate how favorable the physical conditions are I would point out that although the completion of the company's storage dam will create the largest artificial lake in the world, containing 253,368 acre-feet (nearly 12,000,000,000 cubic feet), at a cost of but 4s. 9d. per acre-foot, other somewhat similar dams in other parts of the world, affording much less reservoir capacity, have invariably cost a great deal more. For instance, the Sweetwater Dam, in California, which stores only 18,000 acre-feet of water, cost \$8 10s. per acre-foot; the Merced Valley Dam, with a storage capacity of 15,000 acre-feet, cost £5 10s. per acre-foot; the Castlewood Dam, in Colorado, capacity but 5,380 acre-feet, cost £7 10s. per acre-foot; the Beetalooa Dam, in Austria, capacity 8,480 acre-feet, cost £6 10s. per acre-foot; the Villa Dam, in Spain, capacity 15,000 acre-feet, cost £5 5s. per acre-foot. The cost of these works I have just mentioned when compared with this company's reservoir, with its enormous capacity of 253,368 acre-feet, at a cost of 4s. 9d. per acre-foot, demonstrates the superior natural advantages enjoyed by this company. It should be remembered that as the company distributes water for irrigation the normal flow of the river will refill the reservoir many times, and it is this feature that so greatly enhances the value of the company's rights.

The flood season being the irrigation season, will enable us to fill and refill our great reservoir again and again, which will increase the irrigation capacity of the company's system enormously, and as there are several million acres of magnificent alluvial lands belonging to the Government now idle and useless, but available under the desert act, as soon as the company's proposed additional canals are built the entire capacity of the river can be utilized. Already over 50,000 acres of valley lands have been brought under ditch, and so soon as the company's main dam has been completed these lands alone will give an income of over £15,000 a year at the low annual water rental of 6s. per acre for each acre irrigated. Notwithstanding the company controls the only possible source of water supply, it is not your board's intention to in any degree abuse the advantages secured by its exceptional rights and privileges. Without wishing to pose as philanthropists or other than business men, conducting a large enterprise upon strictly business lines, it is believed that by wisely studying the best interests of the farmers in the valley, as far as compatible with justice to our shareholders, your directors will best advance the interests of the company.

In California the company owning the San Diego River works charges the farmers an annual water rental of 12s. 6d. per acre; the River Ride Water Company, San Bernardino County, Cal., charges an annual rental of £1 5s. per acre; the Union Anaheim Company, Orange County, Cal., charges an annual water rental of £1 13s. per share. Compared with these water rents, and those of other irrigation companies, the company's annual water rent, ranging from a minimum of 6s. per acre to a maximum of 10s. per acre, is certainly very moderate. In view of the highly profitable nature of Rio Grande farming under irrigation, and the abundance of water the company can supply, and considering that without water for irrigation the lands of the valley are valueless for other than grazing purposes, and that without water artificially applied three years out of five are worthless for even grazing purposes, and that with water from the company's canals the lands are worth from £20 to £50 per acre, the landowners and settlers under the company's system will enjoy exceptional advantages. An important part of the company's works has been carried out, and when the whole of the company's proposed canals have been completed over 230,000 acres of low, level valley lands and at least 300,000 acres of mesa lands (low-lying tablelands, irrigable from the company's proposed high-level canal) will be under ditch. Say 50,000 acres pay an annual water rental of 6s. per acre and the remainder 10s. per acre, and allowing that two-thirds only of the above acreage will be irrigated in any one year, the company will derive an income from water rents alone of £175,000 a year.

Gratifying as these figures are, the income from water rents will only form a part of the profits the company should derive in the near future. Less than 100,000 acres of the lands it is proposed to irrigate belong to private parties, the bulk of the lands irrigable being Government property. It is estimated that the private landowners will concede to the company at least a third of their lands in exchange for water rights—carrying the usual annual water rent payable each year to the company—to the remaining two-thirds. In this way the company will acquire from the private landowners a very considerable proportion of their lands, and as soon as these lands are under ditch they will be readily salable at prices ranging from £20 to £50 an acre—manifestly a source of great profit to the company. In addition to the lands that the company will acquire from the private landowners in the valley, the company will be able to secure immense blocks of land in fee simple from the Government on even more advantageous terms. All of these Government lands are open to selection to what is called the desert act, whereunder a title can be acquired by putting water on the land and paying a nominal land-office fee of about 5s. per acre. Controlling the only possible source of water supply, this company practically controls these Government lands. These lands, also, owing to their remarkable fertility, will be readily salable as fast as they are brought under ditch and a source of very large profit to the company.

The lands capable of being adequately irrigated from the Rio Grande afford such exceptional profits when properly cultivated that there is no difficulty in finding purchasers. As the company's works are proceeded with, and large blocks of lands thrown open for settlement, the land will be sold to fruit and vine growing companies, subsidiary colonization companies, etc., and to farmers from other parts of the United States and from Europe. I am giving you these details that you may fully realize the unique value of the company's property and control of this great river. That you may understand your director's reason for anticipating a substantial subsidy from the United States, I will now proceed to explain the nature of the matter at issue between the company and the United States and Mexican Governments. As you are probably aware, the Territory of New Mexico, now a part of the United States, formerly belonged to the Republic of Mexico (Old Mexico), but was purchased from Mexico early in this century and annexed to the United States. At the time of this annexation a treaty, called the Guadalupe Hidalgo treaty, was entered into between the United States and Mexico, wherein the Rio Grande River from south of the southern boundary line of New Mexico was declared to be the boundary line between the two Republics. A few years later a second treaty between the two Republics, known as the Gadsden treaty, was signed.

Under these two treaties the Republic of Mexico claims to be entitled to joint control of the Rio Grande and sufficient of the waters of the stream for the irrigation of the Mexican farmers' lands on the Mexican side of the river, and has now filed at Washington a formal demand for a large indemnity because of our dam and other works for the appropriation of the waters of the Rio Grande for irrigation purposes in New Mexico, about 50 miles above. By again consulting the map, you will see that the Rio Grande has its source in southern Colorado, flows almost due south through New Mexico, bisecting that Territory, and only becomes the boundary line between the two Republics below the southern boundary of New Mexico. The

Mexican minister has pointed out in his official demand upon the United States Government that the city of Juarez, on the Mexican side of the Rio Grande, opposite the American city of El Paso, has existed for more than three hundred years, during which time many thousand acres of the Mexican side of the river have been irrigated and cultivated, but that the completion of this company's proposed works will almost entirely deprive the Mexican farmers of water. Mexico's claim has placed the United States Government in a very awkward position. The company's titles were legally acquired under the Territorial laws of New Mexico and the Federal laws of the United States, the vendor company's right to impound and appropriate the waters of the Rio Grande having been finally and formally recognized by the late Secretary of the Interior, a member of Mr. Cleveland's Cabinet. Each American State being a sovereignty within itself, enjoys what is termed State rights or home rule, and the Federal authorities at Washington having formally authorized, under a Cabinet minister's signature, the construction of the company's works, having no power, notwithstanding the terms of the treaties with Mexico, to interfere with our diversion in New Mexico of the waters of the Rio Grande for irrigation purposes.

Under the pressure from Mexico the United States Government appointed a commissioner to investigate the matter, with a view to providing, if possible, water for the Mexican farmers; but the commission reported the Rio Grande to be the only possible source of water supply. Finally the Secretary of State wrote to the Secretary of the Interior, suggesting "That an investigation be made of the rights granted to the Rio Grande Irrigation and Land Company, Limited, with a view to ascertaining whether there is any legal power to cancel those rights; and if the power exists, whether it can be exercised without injustice to the parties directly and indirectly interested in the enterprise." I have here quoted from the Secretary of State's letter. We are creditably informed that the Secretary of the Interior advised the State Department at Washington that no such power to cancel the rights conceded to the company existed. About this time Mexico raised her claim for damages to \$22,000,000, and finally prevailed upon the State Department to institute proceedings against the company on the grounds that the impounding of the waters of the Rio Grande would interfere with the navigation of that stream, and an injunction was therefore served upon the company's local representatives, and all works were suspended. In due course the case came up for trial and the injunction was dissolved by the court, the action being dismissed with costs, in favor of the company.

Ultimately the Government served notice of an appeal to the Territorial supreme court, and the judges of the supreme court, after devoting a day to consideration of the evidence submitted in the lower court, dismissed the Government's appeal, with costs in favor of the company, the court unanimously ruling that the Government's action was without equity. This case has excited the greatest possible interest throughout the whole of the Western States, it being recognized that if the impounding of the waters of the Rio Grande, a nonnavigable stream in New Mexico, could be declared to be illegal on the ground that such impounding would interfere with the navigability of the river lower down stream, then the same ruling would apply to practically all of the rivers in America whose waters are impounded and appropriated for irrigation, and two-thirds of the existing irrigation companies would forfeit their rights, each State where irrigation is practiced being up in arms to protect its State rights—its rights to deal with the waters of streams flowing within its territory. In view of the magnitude of the question at issue, I am glad to be able to read to you the summary of the decision as published by the Territorial supreme court in its transcript of record:

"United States of America (No. 140) v. The Rio Grande Irrigation and Land Company, Limited. (Injunction.) Syllabus of opinion:

"1. Under the treaties with Mexico each Republic reserves all rights within its own territorial limits. This would have been so upon principles of international law without such reservation. States lying wholly within the United States belong exclusively to it, and the soil within the United States is not burdened with a servitude in favor of Mexico in respect to any duty to so discharge the water as to promote or preserve the navigability of the Rio Grande.

"2. It is not the capacity of a stream to float a log or row a boat which renders it a navigable river within the acts of Congress (1890 to 1892), but whether, at regular periods of sufficient duration, and in its regular condition, its capacity is such as to be susceptible of beneficial use as a public highway for commerce. The Rio Grande in Mexico is not a navigable river.

"3. The power to control and regulate the use of waters not navigable, exercised by States and Territories in the arid West, was confirmed by Congress by the act of 1866, and that power now resides wholly in such States and Territories under the act of 1877, and subsequently, therefore, the diversion of such local waters is not a viola-

tion of any act of Congress, even though the navigable capacity at a distance may become thereby impaired."

The importance of this decision to other irrigation companies will be at once understood when I tell you that over 25,000,000 acres are annually irrigated in the United States. From this action it must not be supposed that the United States Government is antagonistic to the company. To the contrary, we have reason to believe the United States Government to be the reverse of unfriendly, as, notwithstanding the justice of Mexico's urgent demands and pressing claims, the Attorney-General did not authorize the injunction suit until the beginning of the flood season, when the company's works would have been suspended for the time being in any event, thereby avoiding, as far as possible, unnecessary injury to the company. In the Government's bill against the company Mexico's claim that the Guadalupe Hidalgo and Gadsden treaties have been violated by the United States was conceded, which apparently leaves the United States no option but to indemnify Mexico or arrange with this company to supply water to the Mexican lands; and it is now proposed that the United States Government should subsidize the company to the extent of \$250,000 (£50,000) a year for twenty years in consideration of the company supplying the Mexican farmers on the Mexican side of the river with sufficient water for the irrigation of their lands (the Mexican farmers paying the company an annual water rental of 6s. per acre), thereby making good the United States' obligation under her treaties with Mexico. As Mexico has not raised her claim against the United States to \$25,000,000, it may be safely assumed that the authorities will, at an early date, take steps to finally settle the matter by subsidizing the company.

An American paper recently published an interview with a prominent Senator about the company's position. He stated that no statute has been violated, as the company's dam will not obstruct a navigable stream, and that the appeal to the Supreme Court of the United States had been made in order to secure a final ruling on the questions involved. As several of our members have expressed a fear that the United States may out of hand invalidate the company's rights and confiscate the valuable permanent works we have already carried out, I desire to point out for the general information of our shareholders that such a step would be impossible. The State and Federal courts have repeatedly ruled that vested rights may not be set aside or confiscated by act of Congress or otherwise, the Constitution of the United States, as construed by the Supreme Court, rendering it impossible for any act of Congress to be made retrospective or retroactive in its application so far as existing vested interests are concerned. As a case in point, I would recall your attention to the old alien land law of America now practically repealed by the Catron Act, so far as the Territories are concerned. When the alien land law was passed it was found impossible to make it retrospective or in any way apply to the then existing alien interests in American real estate.

As a public company in this country may not legally do anything contrary to the spirit and purport of its articles of incorporation and articles of association, so the United States authorities or any (United States) State authority may not pass and enforce an unconstitutional act. Therefore our rights are unassailable, as any attempt to invalidate the company's rights or confiscate its property would be unconstitutional. It is possible, however, under what is known in America as the law of eminent domain for the Government, by act of Congress, to nationalize the Rio Grande; but the possibility of such a course need not be taken into consideration, as it would be entirely opposed to the traditional policy of the United States, and, even if such a bill should be approved by the Senate, the company's rights could not be taken over without payment of full and ample compensation based upon their potential value.

As your chairman, I have already officially notified the State Department, the Secretary of State, and the Attorney-General of the company's intention to proceed to recover damages from the United States for injury to our works, loss of credit, and losses sustained through delay consequent upon the Government's injunction as soon as a proper estimate as to the extent of the injury and losses sustained can be arrived at, and in the correspondence that has passed between the company and the Department of State the company's rights have been valued at between £2,000,000 and £3,000,000 sterling. Manifestly the most inexpensive and satisfactory way out of the difficulty will be for the United States to subsidize the company as proposed. It will, perhaps, be remembered that at the time of our public issue a section of the English press, while commenting most favorably upon the prospectus and the promising character of the company's undertaking, expressed hearty approval of what was declared to be our deserving attempt to enlist British financial support for an English company undertaking the development of an American property in the face of the then existing prejudice against American securities and the state of the

American market; but I venture to say that even the most prejudiced will admit that your directors have not been ill advised in securing for the development of British capital a property so certain to produce large and bona fide profits for their shareholders, and which will at the same time confer an enormous benefit upon a very considerable proportion of the Anglo-Saxon race. I refer, of course, to the thousands of families that have settled and will settle in the Rio Grande Valley, the citizens of the city of El Paso, and the various towns within the sphere of the company's field of operation, upon whom the company's undertaking will confer permanent and increasing benefit.

We purpose making the company a great commercial and financial success. It is impossible to conceive of anything short of a great national calamity that can prevent our succeeding. It is gratifying to know that the company's success will mean a large measure of prosperity for the citizens of the valley as well as profit for our shareholders. The particulars I have given to you with regard to the position at Washington will explain why it is proposed to defer for the time being, until this matter has been settled, the transaction of the customary business of an ordinary general meeting, and I therefore formally move that this meeting do adjourn to a date to be hereafter fixed, when the usual business transacted at an ordinary general meeting of the company will be brought forward. [Applause.]

Mr. R. J. Price, M. P., seconded the resolution, which was carried unanimously.

A vote of thanks was given to the chairman and directors, and the proceedings terminated.

JUNE 11, 1896.

THE SECRETARY OF STATE.

SIR: I have the honor to inclose herewith a letter from N. P. Allison, esq., secretary of the Rio Grande Irrigation and Land Company, Limited, dated at London, England, on April 10, 1896, adverting to the demand of the Mexican Government for compensation for damages for the appropriation of the waters of the Rio Grande by Americans, and asking if his company can be subsidized if it supplies water for irrigation on the Mexican side of the river.

I also inclose copy of a report on the above letter by the Acting Commissioner of the General Land Office, dated the 5th instant, wherein it is suggested that the matter be referred to your Department.

A copy of the report has been sent to Mr. Allison and he has been advised that his letter has been thus forwarded.

Very respectfully,

HOKE SMITH, *Secretary.*

RIO GRANDE IRRIGATION AND LAND COMPANY, LIMITED,
34 VICTORIA STREET, WESTMINSTER,
London, April 10, 1896.

The Hon. HOKE SMITH,
Secretary of the Interior,

Department of the Interior, Washington, D. C.

DEAR SIR: We are informed by our representative in El Paso that in view of the demand of the Mexican minister at Washington, on behalf of his Government, for \$11,000,000 as compensation for the appropriation of the waters of the Rio Grande by American irrigators in New Mexico and Colorado, to the great detriment and loss of the Mexican farmers on the Mexican side of the Rio Grande and in violation of the conditions of the Guadalupe Hidalgo treaty, your Government contem-

plates subsidizing the building of a storage dam at El Paso for the purpose of impounding sufficient, if possible, of the flood waters of the river to supply the Mexican irrigators on the Mexican side, thereby making good your treaty obligation.

As this company has acquired by lease from the Rio Grande Dam and Irrigation Company of New Mexico, U. S. A., the right to put in a storage dam on the Rio Grande at Elephant Butte, in Sierra County, N. Mex., and intends beginning the construction of a 96-foot solid-masonry dam (stone and concrete) in August or September next—as soon as the river is low enough to enable the foundation to be laid—we beg to respectfully call your attention to the fact that after the completion of the Elephant Butte Dam, which will create a storage reservoir capable of impounding 11,036,722,000 cubic feet of water, this company will be in a position to provide an ample supply of water for the irrigation of the entire valley of the Rio Grande from Elephant Butte, in Sierra County, N. Mex., to Fort Quitman, Tex., the Mexican side of the valley below the southern boundary of New Mexico, inclusive.

We may also say that our engineer has reported on the El Paso dam site as being unfeasible. The cost of building a storage dam at any point in the canyon just above El Paso renders it impracticable. Owing to the width of the canyon, and the enormous expense that would have to be incurred in obtaining a suitable foundation, together with the vast sum necessary to move the Santa Fe and Southern Pacific railways, where they enter El Paso through the canyon, to higher levels that would otherwise be submerged, and the large amount of compensation that would be payable to present owners of the magnificent body of irrigable land just above the canyon that would be flooded by the construction of a storage dam at El Paso, such a work is manifestly unfeasible. Besides it is wholly unnecessary to attempt to provide for the storage of water at El Paso, as this company will, after this year, be able to make good your Government's obligation under its treaty with Mexico.

I may also say for your information that although the Rio Grande Irrigation and Land Company, Limited, has been incorporated as an English company in order to provide the two or three million dollars necessary to carry out the objects of the Rio Grande Dam and Irrigation Company of New Mexico, the shares of the English company are mostly held by Americans.

We inclose copy of map showing the extent of the irrigation works this company intends to carry out within the course of the next year or two and will be glad to hear from you to what extent your Government would be prepared to subsidize this company in the event of our supplying the water to the Mexican irrigators on the Mexican side of the river in and about Juarez in the El Paso Valley.

Yours, very faithfully,

For the Rio Grande Irrigation and Land Company, Limited,

N. P. ALLISON, *Secretary*.

Directors.—The Right Hon. the Earl of Winchilsea and Nottingham, the Right Hon. Lord Clanmorris, Lord Ernest W. Hamilton, Robert J. Price, M. P., Col. W. J. Engledue, late R. E., John Ferguson, Nathan E. Boyd, M. D., R. Chetham-Strode, M. B.

DEPARTMENT OF THE INTERIOR,
GENERAL LAND OFFICE,
Washington, D. C., June 5, 1896.

THE SECRETARY OF THE INTERIOR.

SIR: I am in receipt by reference from the Department for report in duplicate and return of papers of a letter of Mr. N. P. Allison, secretary of the Rio Grande Irrigation and Land Company, Limited, dated London, England, April 10, 1896, in relation to the Elephant Butte reservoir of the Rio Grande Dam and Irrigation Company.

The writer states that he is informed that the Mexican minister at Washington has made a demand upon this Government for \$11,000,000 as compensation for the appropriation of the waters of the Rio Grande River for irrigation purposes in New Mexico and Colorado, which is claimed to be to the great detriment and loss of the Mexican farmers on the Mexican side of the Rio Grande River, and which is also claimed to be in violation of the conditions of the treaty of Guadalupe Hidalgo. The writer also states that he is informed that this Government contemplates subsidizing the building of a storage dam at El Paso for the purpose of impounding a sufficient amount of the flood waters of the river, if possible, to supply the Mexican irrigators according to their claims under the treaty.

He states that the company of which he is the secretary has acquired by lease from the Rio Grande Dam and Irrigation Company the right to construct a storage dam at Elephant Butte Reservoir, right of way for which, as the records of this office show, was approved to the latter company on February 1, 1895, under the provisions of sections 18 to 21, act of March 3, 1891 (26 Stat., 1095).

The writer claims that the projected reservoir at El Paso is not feasible and that the Elephant Butte Reservoir is capable of impounding an ample supply of water for a very large area of the Rio Grande Valley on both the American and Mexican sides, and he desires to know to what extent this Government would be prepared to subsidize his company in the event that it should supply water for irrigation on the Mexican side of the river.

As to the reservoir near El Paso referred to, it appears from the records of this office that a large area of land in New Mexico has been segregated as a reservoir site by the Director of the Geological Survey under the acts of October 2, 1888 (25 Stat., 505-526), and August 30, 1890 (26 Stat., 371-391).

In relation to the matter of the interference with the use of water for irrigation purposes on the Mexican side of the river, this office is not informed. Any representations of the Mexican Government upon this subject would doubtless be made to the Department of State, and I would therefore recommend that the matter be referred to that Department.

The papers and a duplicate of this report are herewith inclosed.

Very respectfully,

E. F. BEST,
Acting Commissioner.

WASHINGTON, D. C., *February 16, 1901.*

HON. JOEL P. HEATWOLE,
Committee on Foreign Affairs,
House of Representatives, Washington, D. C.

SIR: Prof. Robert T. Hill, of the United States Geological Survey, than whom no one has a more accurate knowledge of the characteristics of the Rio Grande, contributed an interesting and instructive article entitled "Running the canyons of the Rio Grande" to the January number of the Century Magazine. This article especially deals with the hydrographic and physiographic peculiarities of that stream.

In view of the evidence submitted by Gen. Anson Mills, of the United States Boundary Commission, and the engineer of the commission under Gen. Anson Mills's direction, in support of the contention that the Rio Grande is a navigable stream both above and below El Paso, I would respectfully commend Professor Hill's article, a copy of which I hand you herewith, to your consideration.

Professor Hill has for some fifteen years or more been engaged on behalf of the Government in making a scientific investigation of the hydrography of the Rio Grande Basin, and he is probably the highest authority in this country on this subject, which he has made so thoroughly his own.

Professor Hill, in his article as above, states:

Just above Presidio the Rio Conchos enters the Rio Grande from Chihuahua. This is a long stream and brings the first permanent water to the main river. In fact, the Conchos is the mother stream of the Rio Grande. Above the mouth of the Conchos the Rio Grande was a dry sand bed. Below it was a good stream 100 feet wide, with a strong current. * * * At this season of the year the Conchos is flooded. * * * (It will be noted that the Rio Grande was dry above the mouth of the Conchos.)

I do not claim to be the only man who has traveled the tortuous and dangerous channel of the frontier stream (Rio Grande); for one man, and one only, James MacMahon, has made at least three trips down the river. Mine, however, was the first exploring expedition to pass the entire length of the canyons, and, with the exception of MacMahon's, was the only attempt that succeeded. Others, like Gano and Neville, have passed the fearful 12 miles of the Grand Canyon de Santa Helena. The only Government expedition, the International Boundary Survey, pronounced the canyons impassable, and gave up the attempt to survey them, except the lower hundred miles of the course, which Lieutenant Micheler passed through. (See Report of the United States and Mexican Boundary Survey, by William H. Emory, Vol. I, 1857.)

MacMahon was interested neither in science, exploration, nor travel. He ventured the stream without knowledge of its dangers. * * * Unguided and alone, he loaded his boat with traps * * * and slowly drifted down to Del Rio, braving a thousand dangers and making the first successful passage.

The finding of MacMahon was the first of the dozen fortuitous circumstances which made my trip possible, and there was not a day that his knowledge of the dangers of the stream did not save us from loss and destruction. * * *

Hardly had we begun to enjoy the pleasant sensation of drifting down the stream when a roaring noise was heard ahead. This came from seething and dangerous torrents of water foaming over huge rounded boulders of volcanic rock. * * * Reaching these rapids, we had to get out of the boats and wade beside them, pushing them off or over the stones. * * * This process had to be repeated many times a day for the entire distance. * * * The swift current and uncertain footing of the hidden rocks make these rapids very dangerous.

A few miles below Polvo * * * we entered the first of the series of canyons of the Rio Grande in which we were to be entombed for the succeeding weeks. This bears the cheerful name of Murderer's Canyon. This and the Fresno Canyon, a few miles below, are vertical cuts about 600 feet deep through massive walls of red volcanic rock. * * *

Below the mouth of Murderers Canyon the rapids are unusually bad and dangerous, and it required all hands but one, who stood guard with cocked rifle, to wade beside the boats and preserve them from destruction. * * *

The river makes a sudden bend as it enters the canyon, and almost in the twinkling of an eye we passed out of the desert glare into the vast and silent depths of its gigantic walls, which rise vertically from the water's edge to a narrow ribbon of sky above. Confined in a narrow channel less than 25 feet wide, without bench or bank upon which to land, our boats glided along without need of oars, as we sat in admiration of the superb prospects which hemmed us in on each side. * * * The walls rose straight toward the sky, unbroken by bench or terrace. * * * With the ends of our oars we could almost touch either wall. * * *

We had gone only a few miles when a halt was suddenly forced upon us. Directly ahead was a place where one side of the great cliffs had caved away and the debris spread across the narrow passage of the river. This obstacle was composed of great blocks of stone and talus rising 200 feet high, which, while obstructing the channel, did not dam the waters. * * * Although the obstruction was hardly a quarter of a mile in length, it took us three days to get our boats across it. (Fine navigable stream this!) * * *

The cliffs are often rigid and geometrically vertical. * * * In many instances the profiles are overhanging or toppling. * * * My attention was directed by the men to an immense boulder so delicately poised upon the very edge of the cliff immediately above me that the vibration of a rifle shot would apparently have dislocated it and sent it thundering down.

Here and there the surging waters at the angle of a bend, beating straight against the limestone, have bored great caves beneath the bluffs at the water's edge. In places gigantic columns 500 feet high have been undermined and dropped down a few feet without tumbling, so that they now lean in uncertain stability against the main wall. * * *

We entered the first of the two canyons, known as the Little and Big San Vicente canyons, respectively. * * * Directly through and across the front of the sierra a vertical black line could be seen marking the vast chasm through which the stream makes its way. As we neared the entrance the river presented the appearance of apparently plunging into a seething hole without visible outlet. * * *

The following morning we passed another short canyon. * * * Beyond this we arrived at the village of Boquillas, where we encountered the first and only American civilization upon our expedition.

At this point, and for about 50 miles down its course, the river is reenforced by a remarkable series of hot springs bursting out of vertical fissures. Roughly estimated the volume of the stream is doubled by springs of this character as it passes through these mountain gorges. * * *

Across the center of the Sierra del Carmen, which rises 7,500 feet above the sea, the river cuts another vertical chasm, which is even more worthy of the name of the Grand Canyon than that of the Sierra de Santa Helena. The Mexican boundary surveyors, upon encountering it, were obliged to make a detour of 50 miles around the mountains to approach the river again, where they finally gave up the attempt of further exploration, and reached the lower Texas country by a long journey through Mexico. * * *

Our journey was just half accomplished, and we had crossed to the eastern side of the Cordilleras, and were upon the Atlantic slope. * * * This lower course is almost a continuous canyon to Del Rio. * * *

Through a huge gap in these the mouth of the Maravillas Creek has been cut. This is a horrible desert arroyo leading northward for 100 miles or more to Marathon. It has a channel sufficient for the Hudson, but is utterly void of water. Now and then great floods pour down its stony bottom, giving the boulders and other desert debris a further push toward the Rio Grande and the sea. * * * I never found a man who knew this stream to run from source to mouth.

The reference to this arroyo is quoted as evidence of the torrential character of the tributaries of the Rio Grande and the consequent torrential character of the Rio Grande itself. It should be remembered that Professor Hill made his trip during the flood season when the Rio Grande is flooded below the mouth of the Rio Conchos by the Conchos, Pecos, Pesquerto, and other floods. The river above the mouth of the Conchos was dry. In New Mexico the Rio Grande floods come from melting snows in the mountains. They are rarely, and never to

any great extent, the result of rains, excepting in the spring when such rains melt the mountain snows. The floods of the Lower Rio Grande come from the Conchos and Pecos, chiefly from the former, and usually from heavy summer rains.

We longed only to escape from the walls upon which we now began to look as a prison. Ten hours of hard rowing each day, every one of which was burdened with the additional labor of dragging the boats over dangerous rapids, constant wetting by wading and ducking, * * * had put us all in a condition of * * * nervous tension. * * *

In the foregoing sentences in brackets are not Professor Hill's.

From the above excerpts from Professor Hill's article in the January number of the Century it will be seen that for at least 350 miles of the course of the Rio Grande below the mouth of the Conchos navigation for commercial purposes would be absolutely impossible, and that in Professor Hill's opinion the waters of the alleged navigable section—the Gulf section below Rio Grande City, about 150 miles upstream from the Gulf of Mexico—are contributed almost wholly by the Conchos and Pecos rivers.

In fact, upon more than one occasion Professor Hill has definitely asserted that the flood waters of the Rio Grande in New Mexico do not in any appreciable degree contribute to the flow of the river below the mouth of the Rio Conchos.

For four years the Department of Justice has sought to prove: (1) That the Rio Grande is navigable in New Mexico; (2) that if the Rio Grande is not navigable in New Mexico it is navigable near its mouth, and that a storage dam at Elephant Butte, in Sierra County, N. Mex., would lessen the navigability of the river at this lower point.

It is obvious from the correspondence on file in the Departments that the proceedings instituted by the Government against the Rio Grande Dam and Irrigation Company were instigated by General Mills and those responsible for the international dam project. It is equally obvious that the heads of Departments were originally misled by the misrepresentations that were made as to the navigable capacity of the Rio Grande in New Mexico, for when the proceedings against the company were first begun action was based upon the specific plea that the Rio Grande is navigable in New Mexico, a raft having been floated down the river from Canutillo to El Paso (a distance of 12 miles) in 1858 or 1859. Subsequently the plaint was amended as above.

The Territorial courts and the Federal Supreme Court have declared that the Rio Grande is not navigable in New Mexico; and the Territorial courts have declared that the company's works would not diminish the navigable capacity of the Rio Grande in the Gulf section below Rio Grande City. The Supreme Court of the United States practically upheld the Territorial courts on all points of law, and only referred the case back to the lower court for inquiry as to the question of fact, viz, would the company's works "substantially diminish the navigability" of the Rio Grande "within the limits of present navigability" (i. e., the Gulf section between Rio Grande City and Brownsville, about 1,000 miles below)?

After devoting twelve days (in December, 1899) to the hearing of evidence as to the question of fact the court found that "the company's works will not substantially diminish the navigability of the Rio Grande within the limits of present navigability;" and subse-

quently the Territorial supreme court upheld the findings of the court of inquiry on all points. But after months of delay the Attorney-General has ordered an appeal to the Federal Supreme Court notwithstanding the fact that the evidence submitted in this case was overwhelmingly in the company's favor and opposed to the Government's contention, and that the people of New Mexico have repeatedly, in their legislature, in various political conventions, and by formal petition, urged that the Government drop the proceedings that for over four years have deprived the farmers of the Rio Grande Valley of water for the irrigation of their lands—proceedings that have kept a large amount of capital from being invested in the Territory and that have convinced friendly investors abroad that the honesty and good faith of the United States Government can not be relied upon by foreign investors. It is true that the Attorney-General has upon several occasions offered to compromise and drop the case, but as the only question at issue is the alleged effect of the company's works upon the navigable capacity of the river about 1,000 miles below, it is obvious that the Attorney-General, in proposing a compromise, is acting not in the interests of navigation, but in the interest of the proposed international dam project, notwithstanding that he affects to have no interest whatever in bill H. R. 9710.

Maj. O. H. Ernst (report to Secretary of War, 1889), who, with other engineers, was employed under the direction of the Government for the special purpose of reporting upon the navigability of the Rio Grande, stated:

The stream is not navigable, and it can not be made so by open channel improvement. * * * Certainly there is no public interest which would justify the expenditure of the many millions of dollars which such an improvement would involve. The irrigation of the valley is a matter in which the inhabitants are most deeply interested, while the possible navigation of the river receives little or no attention from them. In my judgment the stream is not worthy of improvement by the General Government.

Gerald Bagnell, assistant engineer, reported to the Secretary of War, 1889:

I consider the construction, not only of an open river channel, but of any navigable channel, to be impracticable. During the greatest part of the year, when the river is low, the discharge would be insufficient to supply any navigable channel, except, perhaps, a narrow canal with locks, the construction of which, on a foundation of sand in places 46 feet deep, would be financially, if not physically, impracticable.

Chief Justice Thomas Smith (supreme court of New Mexico, July term, 1897, No. 753) stated:

It appears from affidavits and reports presented in support of the bill in this case, that the objection now raised to the construction of the defendant's dam (the Elephant Butte Dam) rose out of the proposed construction of an international dam and reservoir at El Paso. * * * Investigation of the feasibility of such an international dam * * * evincing the deliberate intention of the Government, by its political department, to take measures, not for the purpose of improving the navigability of the river, but of permanently obstructing it * * * and that the object of this proceeding is not to secure a public benefit from the navigation of the Rio Grande, but rather, under the guise of a question of navigability of the stream, to obtain an adjudication of the interests of rival irrigation schemes in aid of one locality against another.

In a letter dated January 4, 1901 (replying to a letter addressed to the Attorney-General by Mr. John L. Campbell, C. E., of El Paso, Tex., dated December 26 last, relating to the subject involved in the

suit of the United States *v.* The Rio Grande Dam and Irrigation Company), the Attorney-General says:

Some of the suggestions you make are so entirely reasonable that I am moved to express my regret that the management of the case on the part of the company has not been entirely in your hands. I recognize the truth of what you say with reference to the storage of torrential waters of the stream.

This is interesting, as it implies that if "the management of the case on the part of the company" had been in Mr. Campbell's hands the company's interests would have been less ably defended, and the decisions of the courts as to the effect of the company's works upon the navigability of the Rio Grande might have been different. But the Attorney-General does Mr. Campbell (and for that matter the judges of the several courts) less than justice, for, such inference can not be said to be warranted by Mr. Campbell's letter of the 26th of December last to the Attorney-General, in which letter he makes certain specific references to the effect of the storage of torrential waters, and calls the Attorney-General's attention to the fact that the United States Government has established a notable precedent by conserving the headwaters of the Mississippi for the express purpose of improving the low-water navigation of that river.

Parenthetically, it may be stated that although the volume of water conserved on the Upper Mississippi is many times the volume that it is proposed to conserve at Elephant Butte, the effect of the flow of the Mississippi is only perceptible for between 300 and 400 miles. (Vide Report of Capt. Hiram M. Chittenden, Corps of United States Engineers, Document 141, second session Fifty-fifth Congress).

The Attorney-General says that he "recognizes the truth" of Mr. Campbell's statements "with reference to the storage of the torrential waters" of the Rio Grande, and declares that he "believes now, and has always believed, that a plan of cooperation between the United States and the owners of the dams and reservoir could be devised by which the navigation of the stream would not be injuriously affected, and the flow of the water in the river made more continuous than it now is." Mr. Griggs says that—

Before this case went to trial in New Mexico the last time, I (Mr. Griggs) proposed, through my representative, to come to an agreement (with the Rio Grande Dam and Irrigation Company) by which they should be allowed to construct their dam, the discharge of water to be regulated, however, by some commissioner or other third person, so that it should be let out of the reservoir into the stream below in a methodical and reasonable way, beneficial to the stream and not injurious to the company's project. * * * I still think that this is the true basis of the solution of this whole question. * * * So far as my administration of this department is concerned, it has not maintained this suit through any sympathy whatever with the scheme for an international dam, but purely upon the legal principle argued by me in the Supreme Court in this case affecting the right of the United States to have the navigation of the stream unimpaired.

The only possible construction to place upon this specific statement by the Attorney-General is that, despite the evidence submitted in this case and despite the findings of the courts, the Attorney-General still persists in maintaining that the Rio Grande is navigable below Elephant Butte, in New Mexico, and below El Paso, and that the impounding of the flood waters of the river at Elephant Butte would substantially diminish such navigable capacity of the stream. According to his own statement, the Attorney-General desires to enter into a compromise solely with a view to protecting navigation, for he says

that he "has not maintained the suit (against the Rio Grande Dam and Irrigation Company) through any sympathy whatever with the scheme for an international dam." Certainly it would have been more to the point if the Attorney-General had definitely formulated his plan for a compromise. With whom would the company enter into a compromise? Not with the Attorney-General, because the Attorney-General has no power or authority whatsoever to enter into any arrangement on behalf of the United States Government with the company. The Attorney-General has power to drop the case by accepting the findings of the Territorial courts as final, or he can drag the case on and more or less indefinitely defer a final vindication of the company's rights by appealing to the Federal Supreme Court against the findings of the Territorial courts as to the question of fact; and that is all he has power to do.

It is obvious that the appeal ordered by the Attorney-General to the Federal Supreme Court can serve no proper end, for not a scintilla of trustworthy evidence has been submitted by the Department of Justice in support of the Attorney-General's contention. And I desire to take this opportunity to place on record my earnest protest against the manner in which this case has been dragged on from year to year, not in the interests of navigation, but manifestly in the interest of the international dam project. It is a monstrous thing that the Treasury of the Government, the engineers of the International Boundary Commission, and the Department of Justice should, in the interests of the international dam project, be used to crush a legitimate private enterprise.

The unwarrantable attacks upon the Rio Grande Dam and Irrigation Company, and upon the rights of the English capitalists who have invested in the securities of that company, can not but tend to convince the world at large that the current suspicion abroad of the honesty and good faith of the United States officials is justified by facts; and I would respectfully submit that bill H. R. 9710, which proposes to legislate the Elephant Butte Dam case out of the courts, is an improper bill, and that it would be highly improper for Congress to defeat the end of justice in the manner contemplated by the promoters of the international dam project.

I am, sir, your obedient, etc.,

NATHAN E. BOYD.

P. S.—As bearing upon the Elephant Butte Dam case and bill H. R. 9710, I inclose for your consideration—

1. Copy of Governor Otero's argument before the Senate Committee on Foreign Relations.
2. Copy of the Hon. B. S. Rodey's letter of January 5, 1901, to the Hon. H. D. Money, United States Senator.
3. Copy of the Hon. H. D. Money's letter of January 15, 1901, to Governor Otero.
4. Copy of letter from the faculty and trustees of the New Mexico College of Agriculture and Mechanic Arts, dated January 5, 1901, to the Secretary of Agriculture.
5. Copy of resolution passed by the Commercial Club of Albuquerque, N. Mex., on January 26, 1901.
6. Copies of Dr. Nathan E. Boyd's letters of July 24 and December 21, 1900, to the Secretary of State.
7. Copy of letter dated August 8, 1900, from the Hon. A. A. Adey, Assistant Secretary of State, in reply to Dr. Boyd's letter of the 24th July, to the Secretary of State.
8. Copy of Dr. Boyd's Appeal to the People of New Mexico, contributed to the Santa Fe New Mexican and other Territorial papers.

9. Copy of Dr. Nathan E. Boyd's memorial to the United States Senate, presented by Senator Carter on January 22, 1901; referred to the Committee on Foreign Relations and ordered to be printed.

10. Copy of Prof. Robert T. Hill's article in the Century Magazine, January, 1901.

NEW MEXICO PROTESTS AGAINST BILL S. 3794.—GOVERNOR OTERO'S ARGUMENT BEFORE THE SENATE COMMITTEE ON FOREIGN RELATIONS.

Mr. Chairman and Gentlemen of the Committee: I appear before you representing the 200,000 people in the Territory of New Mexico, as well as the material interests of that great Territory which are vitally affected by Senate bill No. 3794, now under consideration. This bill is identically the same as that introduced in the House by Mr. Stephens, of Texas, and against the passage of which the people of New Mexico, in their their legislature, and in various political conventions, have entered their earnest protests. The same bill now appears, introduced by the honorable Senator from the State of Texas, and has been favorably reported by the Committee on Foreign Relations of that body, without any consultation with the people of New Mexico, or any attempt to get their views upon the subject, and indeed without their knowledge, until the report of the committee was made public on the 19th of last month.

New Mexico has for fifty years been the ward of this Government, and supposed to be by treaty stipulations and the relations existing between guardians and wards entitled to the fostering care of this great nation. But this bill, introduced in the Senate and recommended for passage, is calculated to deprive the Territory of its chief source of income and its main dependence for existence. Irrigation has been practiced in that Territory successfully for the last three hundred years. It was the first part of North America to be irrigated, and while the methods were crude, and the results most of them small, in the aggregate they have made the valley of the Rio Grande a succession of vineyards, orchards, and alfalfa fields for more than 200 miles along its borders.

This committee will observe that its report recommends in the fifth paragraph, under the head of recommendations, found at page 5 of the report which is before you, that in the proposed treaty for the final settlement of all questions regarding the distribution of the waters of the Rio Grande some way shall be provided with which to prevent the construction of any large reservoirs on the Rio Grande in the Territory of New Mexico, or, in lieu thereof, if that be impracticable, restrain any such reservoirs hereafter constructed from the use of any waters to which the citizens of the El Paso Valley, either in Mexico or the United States, have the right by prior appropriations.

It will be observed in this report that nothing is said in regard to the construction of such reservoirs in the State of Colorado, although in a previous portion of the report it is shown that a much larger amount of water is taken by that State than by the Territory of New Mexico. Thus it is proposed to absolutely prohibit any irrigation enterprises in the Territory of New Mexico at a time when this Government is being urged by the representatives from Colorado to appropriate \$12,000,000 for the construction of reservoirs in certain States named, this bill not including the Territory of New Mexico. With New Mexico a State, as of right it ought to be, no such proposition as this would for an instant be entertained by anyone, and I most respectfully submit that our very helplessness in the national councils should be a most potent argument for the National Congress to see that her present rights are not infringed upon or curtailed for the benefit or to the advantage of the great State of Texas or our sister Republic on the south.

Under the treaty of Guadalupe Hidalgo our citizens were forever guaranteed their rights of property as they existed at that time, May 30, 1848, and to the enjoyment of all the rights of citizens of the United States according to the principles of the Constitution.

The report of the joint commission, which is made a part of your report on this bill, was made upon a wrongful assumption of the facts. After that date the United States instituted a suit against the Rio Grande Dam and Irrigation Company to restrain it from constructing or maintaining a dam across the Rio Grande at a point about 100 miles north of the city of El Paso, Tex., where the boundary line between the United States and Mexico is the center of that stream. The defendants demurred to the bill; the demurrer was sustained in the district court; the United States took

it to the supreme court of the Territory, which, on the 5th of January, 1898, sustained the district court. It was then taken by the Government to the Supreme Court of the United States, where, on the 22d day of May, 1899, the case was remanded, with instructions to order an inquiry into the question whether the intended acts of the defendants in the construction of the dam and in appropriating waters of the Rio Grande will substantially diminish the navigability of that stream within the limits of present navigability, and if so, to enter a decree restraining those acts to the extent that they will so diminish.

This case is reported in 174 United States, at page 690, in which Judge Brewer, delivering the opinion, says, at page 699: "I am not, therefore, disposed to question the conclusion reached by the trial court and the supreme court of the Territory that the Rio Grande, within the limits of New Mexico, is not navigable; neither is it necessary to consider the treaty stipulations between this country and Mexico." In accordance with the mandate of the Supreme Court of the United States, testimony was taken for several weeks before Judge Parker at Las Cruces, near the Mexican border, and a large number of witnesses were examined with reference to the fact whether such a dam would substantially diminish the navigability of the Rio Grande within the limits of present navigability. All of this testimony was to the effect that such a dam as was contemplated would not have any effect in that direction, and the court so found. From this judgment of the district court the United States took an appeal to the supreme court of the Territory, which affirmed the judgment of the court below. Thereupon the United States again ordered an appeal to the Supreme Court of the United States, where it is now pending, and I submit to this committee that while the matter is sub judice, it would be highly improper for a coordinate branch of the Government, i. e., the legislative, to act in such a way as is contemplated by the bill in question.

The transcript of the record in that case contains an enormous amount of testimony from reliable parties upon the subject in controversy, to which I would invite the attention of the committee, as my time is too limited to read even a portion of it.

It will be observed that this "joint commission" earnestly recommends the construction of a dam across the Rio Grande at El Paso, at an expense of \$2,317,133.36, and the ceding by the United States to Mexico of a portion of the Territory of New Mexico, and that the Senate committee agrees in these recommendations in its report on this bill, while the United States, by its law department, has, for more than four years past, been endeavoring to prohibit the construction of a similar dam 100 miles north of El Paso, upon the ground that it would materially impair the navigability of that river at a point between 800 and 900 miles below El Paso, thus violating the provisions of the treaty of Guadalupe Hidalgo and impairing the contract entered into by that treaty between us and the Republic of Mexico. Just how the distinguished gentlemen on the commission and on the Senate committee arrived at the conclusion that an international dam at El Paso is demanded by the treaty of Guadalupe Hidalgo and will result in great benefit to both nations by the expenditure of more than \$2,300,000, while a similar dam constructed by private parties 100 miles above that point is a gross violation of treaty obligations and will seriously impair the navigability of the stream, is something about which I am not advised, and I desire and earnestly urge this committee to grant our people time in which to solve this problem and fully present arguments and facts to show the ruinous effect which the passage of this bill would have upon the industries of our people.

As I have stated before, the legislature of New Mexico and its people in conventions have most earnestly protested, in the name of justice and right, against the passage of the so-called Stephens bill, which is identical with the one under consideration. The legislature of that Territory assembles on the 21st instant, and immediately after its convening one of its first acts will be to authorize the appointment of a nonpartisan committee to visit Washington for the purpose of presenting arguments and facts against the passage of this bill. Before 1850 New Mexico had been an outlying province of the Kingdom of Spain and the Republic of Mexico, neglected and uncared for by either Government, compelled to depend upon herself and her own resources, to contend against an arid climate and the savage Indians within her borders. Since that time she has had little from the National Government, but has conducted her own internal affairs, erected a capitol building, a penitentiary, university, agricultural college, school of mines, and normal schools entirely at her own expense. Our persistent endeavors to be admitted to the sisterhood of States have been ignored; both political parties and every legislature for the last twelve years have made the application in vain, notwithstanding we have more wealth and population than any of the recently admitted States of the Union. We bow with submission to this will of Congress, but we can not find words sufficiently strong with which to protest against this bill now pending before you, which deliberately pro-

poses to cede a portion of our Territory, to prohibit the construction of reservoirs upon our principal stream, and deprive our people of using even the limited means at our command for purposes of agriculture. While we admit that Congress has the power to do all these things, as the guardian has the disposal of his ward's property, yet we protest against the right to exercise it, as taking away our property, not only without compensation, but actually inflicting an irreparable injury in addition to its loss.

ALBUQUERQUE, N. MEX., *January 5, 1901.*

HON. H. D. MONEY,
United States Senate, Washington, D. C.

DEAR SIR: The other day you reported from the Committee on Foreign Relations S. 3794, "A bill to provide for the equitable distribution of the waters of the Rio Grande between the United States of America and the United States of Mexico," etc.

With all due respect, Senator, on behalf of the people of New Mexico I desire to solemnly protest against the passage of the bill in its reported form at least.

I have read your report carefully, and all its references, except Senate Doc. 229, which I have not at hand, but apart from that I am quite familiar with the history of the questions involved, and desire to state to you, sir, that the Committee on Foreign Relations missed having before it the most important information concerning the subject-matter it was considering, and that is this:

You will recollect that the Supreme Court of the United States, in *United States v. Rio Grande Dam and Irrigation Company et al.* (174 U. S., 690), remanded the cause to the Territorial court to have evidence taken as to whether or not the works being constructed by defendants in any manner "substantially" interfered with or diminished the navigability of the Rio Grande at any navigable point below El Paso, where the river forms the international boundary line. Well, when the cause came back to the Territory for that purpose, a very large amount of evidence was taken on that question, and the case was argued with the greatest ability by counsel for the Government and defendants. The court unhesitatingly held against the contention of the Government. The latter appealed again to the supreme court of the Territory, and that court affirmed the decision of the lower court, thus deciding for the fifth time all the questions involved for the defendants.

Now, recently, since my return from Washington, where I had the pleasure of meeting you for a few moments, I by diligent effort succeeded in inducing the United States attorney for New Mexico to perfect the appeal to the Supreme Court of the United States, which he had been ordered to take almost at the end of the time limitation, in the cause, and the entire record, with all the voluminous evidence, records, maps, etc., has gone up and will shortly be printed in the higher court. This record, when printed, will contain a vastly more elaborate exposition of the questions sent down for investigation by the court in 174 U. S., 690, than were ever collated anywhere, and ought in justice to New Mexico and Colorado, as well as the defendants in that suit, to be seen by Senators before they are asked to vote upon such an important matter.

When one considers the consequences of S. 3794 becoming a law in its reported form, virtually paralyzing New Mexico, at least, forever, it is to my mind, with all due respect, incomprehensible that Senators could ever vote for it.

When it comes to a question of prior appropriation, the Upper Rio Grande was inhabited long years before there was any settlement, save that of a very few Indians, at El Paso; and while the people of El Paso may have some equities in the matter, it does look as though under all the law this Government owes no consideration to the citizens of a foreign state as against the rights of its own citizens.

New Mexico, Senator, has no vote in Congress and has to depend upon the sense of right and justice of all Senators and Congressmen, and I sincerely hope that this bill will not be pressed to passage until at least an opportunity is had for Senators, yourself among the rest, to examine this new record spoken of above. Then, also, an effort is to be made to advance the cause upon the docket of the Supreme Court of the United States, and if the court affirms the supreme court of the Territory there will, of course, be a very material modification of S. 3794 made before it is enacted into law.

Hoping that you will do what you can to stay this proceeding until the investigation I have mentioned is made, and assuring you of my most distinguished consideration,

I am, sincerely, yours,

B. S. RODEY,
Delegate-elect from New Mexico to the Fifty-seventh Congress.

UNITED STATES SENATE, *January 15, 1901.*His Excellency, Governor OTERO,
Santa Fe, N. Mex.

MY DEAR GOVERNOR: Since our conversation this afternoon I have had a conference with Senator Culberson, and did as I told you I would. I told him that I would not permit the passage of any section of his bill that would in any way impair the rights of the citizens of New Mexico to all the water to which they had ever been entitled. He assured me that he had no such design, and if there was anything in the bill that would appear that way he was willing to strike it out. I do not think there will be any difficulty in settling this matter to your satisfaction. I regret exceedingly that for a moment anyone in New Mexico should think that I was capable of advocating a measure to their detriment. I will always be pleased to serve you and the people of New Mexico.

I have the honor to be, very respectfully, yours,

H. D. MONEY.

NEW MEXICO COLLEGE OF AGRICULTURE AND MECHANIC ARTS,
*Mesilla Park, January 5, 1901.*The SECRETARY OF AGRICULTURE,
Washington, D. C.

SIR: The undersigned, members of the faculty of the New Mexico College of Agriculture and Mechanic Arts and members of the station council of the New Mexico agricultural experiment station, desire respectfully to present for your consideration the following statements:

First. A bill (S. 3794) was recently introduced in the Senate during its present session and was reported favorably by the Committee on Foreign Relations, as shown by Senate Report No. 1755, calendar No. 1736. This bill is similar in general character and purpose to a bill introduced in the House during the Fifty-sixth Congress, first session, being bill H. R. 9710. Both of these bills authorize the construction of an international dam on the Rio Grande at or near El Paso, Tex., and both contain a clause which virtually forbids hereafter the construction of reservoirs in the Territory of New Mexico. We desire to protest against the passage of either of these bills, and to emphasize the fact that either of them, if passed, would greatly injure the agricultural interests of the Rio Grande Valley above the point at El Paso, Tex., where the dam contemplated would be constructed. The passage of these bills would work irreparable injury to the Mesilla and Rio Grande valleys in particular and to the welfare of New Mexico generally, and threatens to destroy the usefulness of this experiment station.

Second. Several years ago a company, duly organized under the title of the Rio Grande Dam and Irrigation Company, proposed to construct a reservoir at the Elephant Butte Dam site, on the Rio Grande in New Mexico. By reason of litigation undertaken by the United States courts this reservoir has not yet been completed. Under the absurd argument of navigability of the Upper Rio Grande an injunction was procured stopping the work on the company's project. By a series of decisions in the Territorial district court, the Territorial supreme court, and the Federal Supreme Court, the contentions of the United States Government attorneys have failed to be sustained. The case has recently, for the second time, been appealed from the Territorial supreme court to the Federal Supreme Court, and is at present in that condition. We believe that the interests of New Mexico, and especially the interests of the Mesilla Valley, which is admittedly one of the best agricultural sections of the Territory, would be greatly benefited by the completion of the proposed Elephant Butte Dam, and the work of this college and experiment station greatly helped. The general desire of the agricultural interests of the Territory and of the people of this Territory as a whole is that the proposed reservoir at Elephant Butte be constructed.

We therefore wish, in view of the above facts, to express our desire that the Government's case against the Rio Grande Dam and Irrigation Company be either dropped or brought to a final decision as speedily as possible. To further prolong this litigation, which it is generally felt has been brought about through the action of parties personally interested in the construction of the proposed international dam at El Paso, will materially injure the agricultural interests of this Territory and consequently retard the work of this college and experiment station.

The undersigned are interested in the foregoing only from the standpoint of the best interests of this institution and of New Mexico generally. We believe that the agricultural and allied interests of this Territory are seriously affected by the matters

referred to, and, in the case of the Senate and House bills introduced, seriously threatened. We therefore most respectfully petition your interest and influence in behalf of the welfare of this Territory and this institution, to the end that these interests may be securely protected.

Most respectfully submitted.

(Here follow the signatures of the faculty, etc.)

To the Committee on Foreign Relations of the United States Senate.

GENTLEMEN: The following is a set of resolutions passed by the Commercial Club, of Albuquerque, N. Mex., against the passage of the "Culberson-Stephens bill," S. 3794, entitled "A bill to provide for the equitable distribution of the waters of the Rio Grande River between the United States of America and the United States of Mexico:"

Whereas it has come to the knowledge of this club that a bill is now pending before the Committee on Foreign Relations of the United States Senate, commonly known as the "Culberson-Stephens bill," numbered S. 3794, and entitled as above; and

Whereas the passage of the bill in any form will be a continuous menace and never ending source of litigation to the best interests of the Territory of New Mexico, and will stagnate and forever paralyze our agricultural interests and incidentally all other interests of the Territory; and

Whereas the report made upon said bill (Calendar No. 1736), as well as the entire preamble of the bill itself, is inaccurate in many respects and wrongfully assumes and admits, among other things, an obligation upon the part of the Government of the United States to the Government of Mexico to burden the water catchment areas of New Mexico and Colorado, with a water servitude in favor of lands in the Republic of Mexico, and this notwithstanding the language of the treaty of Guadalupe Hidalgo and the Gadsden treaty and the opinion of the Attorney-General of the United States (21 Opns. Atty. Genl., 274) to the contrary; and

Whereas the whole tenor of said bill is an unpatriotic and wrongful admission of the right of the Republic of Mexico to claim damages against this Government because of citizens of the United States using the waters of the Rio Grande at points where said river is wholly within the territory of the United States, and when the use of said waters does not, as has been held four successive times by the district and supreme courts of New Mexico, in any manner affect the "navigability" of the Rio Grande, at any point where it ever was or ever can be navigable—navigability being the only question under the treaties in which Mexico can have anything to say: Now, therefore, be it

Resolved, by the Commercial Club of Albuquerque, N. Mex., in meeting assembled this 26th day of January, A. D. 1901, That this club most respectfully and solemnly protests against the enactment of said bill, or any other bill of similar import, and against the making of any such admissions as are made therein, and respectfully submits that no restriction of any kind or character (the law being sufficient in that regard) should be placed upon the people or the Territory of New Mexico as to the use of the waters of its own catchment areas and rivers; and

Be it further resolved, That all other commercial clubs, city and town councils, or trustees and boards of county commissioners, and similar commercial, municipal, and quasi municipal bodies in the Territory of New Mexico and in the portions of the State of Colorado affected by said bill, be, and they hereby are, respectfully requested to pass proper resolutions and protests in this behalf and forward the same as these are being forwarded; and

Be it further resolved, That the secretary of this club transmit a copy of these resolutions to the Committee on Foreign Relations of the United States Senate, and respectfully request that body to call for and have printed as a Senate document the record in the case of the Rio Grande Dam and Irrigation Company, now pending on a second appeal from the supreme court of New Mexico in the Supreme Court of the United States, so that the said committee may be fully informed as to the rights of New Mexico in the premises.

The above is a matter of most vital importance to every community in the Territory, and your body is urged to pass similar resolutions to the above and forward the same to the chairman of the Committee on Foreign Relations of the Senate and House of Representatives at the very earliest practicable date.

Yours, very truly,

P. F. McCANNA,
Secretary Commercial Club.

WASHINGTON, D. C., July 24, 1900.

The SECRETARY OF STATE,
State Department, Washington, D. C.

SIR: In the course of my interview with you anent the bill (H. R. 9710, Fifty-fifth Congress, first session) introduced by Mr. Stephens, of Texas, I took the liberty of calling your attention to the fact that some one in the State Department responsible for the compilation of Senate Document No. 229, Fifty-fifth Congress, second session, in regard to the equitable distribution of the waters of the Rio Grande, had, either by gross neglect or with an ulterior motive, omitted or suppressed important documents highly germane to the matter in question. This you declared "impossible," and as you expressed a desire to see the document and to have proof of my statement, I beg herewith to hand you a copy of the document referred to; also a general statement of the Elephant Butte Dam case, in which Mr. Newton Crane advised as counsel.

The accompanying document (No. 229) was compiled and transmitted to Congress in response to a resolution of the Senate of February 22, 1898, requesting the President—

"If not incompatible with the public interest to transmit to the Senate the proceedings of the international commission authorized in the concurrent resolution of Congress of April 29, 1890, and a subsequent international convention between the United States and Mexico of May 6, 1896, and also the correspondence relating thereto with Mexico by the Department of the Interior, Department of War, and Department of Justice, as well as the Department of State, relating to the equitable distribution of the waters of the Rio Grande River, including the draft of an incomplete treaty between said Governments, negotiated between the late Secretary of State, Mr. Olney, on the part of the United States, and Mr. Romero, on the part of Mexico, and all the correspondence between said officials relating thereto."

From the wording of this resolution it may be assumed that the Senate desired all the information obtainable in the Departments touching the subject. But just as it is obvious that the resolution was drawn by some one ignorant of the appropriate methods of communication between this and foreign governments, so, to those familiar with the history of the so-called international dam scheme, it is equally obvious that the resolution and the resulting document are part of a conspiracy to deprive the people of New Mexico and Colorado of a legitimate use of the waters of the Rio Grande, and in particular to destroy the legally acquired and vested rights of the Rio Grande Dam and Irrigation Company, a company incorporated and doing business under the laws of New Mexico.

Although a considerable part of this document is devoted to correspondence more or less irrelevant to the subject, including expensive reproductions of five maps made by Mexican engineers, which afford but little, if any, practical information, the opinion of Attorney-General Harmon, which deals with the whole question, is entirely omitted. In fact, practically every paper that militates against the international dam proposition was suppressed, either in part or as a whole, while every paper favorable to the international dam project and to Mexico's claim was included. It is no exaggeration to say that if the attorney of the Mexican Government had been handed the files of the State Department from which to compile the response to the Senate resolution he could not have produced a statement more favorable to the Mexican claim.

If the resolution was to be construed as all the Departments, except the Department of Justice, have construed it, then the response should have embraced—

(1) The opinion of the Attorney-General, December 12, 1895, which was in reply to a letter of the Secretary of State dated November 5, 1895.

This letter of the Secretary to the Attorney-General inclosed a copy of the resolution of Congress (the concurrent resolution of April 29, 1890) relative to the complaints of Mexico concerning the alleged improper use by American citizens of the waters of the Rio Grande. It also inclosed a copy of a letter from the Mexican minister "in which he states at length the position taken by his Government." Thus the Attorney-General was called upon to review the whole subject and to give his opinion thereon. This he did, and his opinion is the one definite and authoritative official paper affecting the case. Its omission from the papers called for by the Senate resolution can only be attributed to gross neglect or to the supposition that the compilation of the response to the resolution was intrusted to an unscrupulous partisan of the international dam scheme.

(2) The response should have embraced the communication of the Hon. H. B. Fergusson, Delegate to Congress from New Mexico, addressed to the Secretary of State.

This letter was a discussion by Mr. Fergusson as the representative of the people most vitally interested in the whole question.

(3) It should have embraced the paper mentioned by the Secretary of the Interior in his letter to the Secretary of State, printed on page 17 of the document.

Secretary Francis states that this paper was "prepared under the direction of the Assistant Attorney-General," and that it "fully sets forth the claim and contention of the Rio Grande Dam and Irrigation Company, and discusses at considerable length the laws of the State of Colorado and the Territory of New Mexico relating to the waters, and the acts of Congress and the ruling of this Department relating to irrigation." Here was a legal discussion by the law officer of the Department charged with the duty of executing the laws relating to public lands and the use of water for mining and agricultural purposes. It covers at least one important part of the subject on which the Senate would seem to have desired information; but it finds that the citizens of New Mexico have a right to appropriate the waters of the Rio Grande for irrigation and mining purposes, and the treaty of Guadalupe Hidalgo is quoted to sustain such right. This finding is, of course, clearly opposed to the contention of the international dam schemers, and no doubt accounts for the footnote "Omitted" on page 17 of the document.

(4) It omits an important part of the correspondence between the Secretary of State, the Secretary of the Interior, and Col. Anson Mills, relating to the requests of Don Andres Horcasitas, attorney for the inhabitants of Paso del Norte, Mexico, transmitted to the Secretary of State by the Mexican minister.

These letters are dated as follows: From the Secretary to Col. Anson Mills, August 8, 1896; from Col. Anson Mills to the Secretary, October 29, 1896; from the Secretary of State to the Secretary of the Interior, October 31, 1896.

(5) It omits an important letter from the Secretary of State to the Secretary of the Interior dated November 30, 1896.

(6) It omits a statement and argument addressed to the Secretary of State by Mr. J. H. McGowan and Messrs. Holcomb and Keegin, as attorneys for the Rio Grande Dam and Irrigation Company, which company's rights were, and are, jeopardized by the proposed treaty with Mexico.

This paper argues every phase of the question, and is properly in the case, as the rights of the company were directly and admittedly involved.

There are various other papers, more or less important, all relative to the subject, that should have been included.

Now, who was responsible for these significant omissions? The question seems to me to be pertinent, and I respectfully submit that an inquiry is justified by the facts of the case.

I take for granted, and assume without question, that the heads of the Departments have acted throughout in good faith, and that they have merely been misled by the misrepresentations of Gen. Anson Mills and his associates in the international dam scheme.

Valuable vested rights are involved, and the agricultural future of New Mexico is at stake. Further, common honesty demands that those who have trusted to the good faith of the American Government, and have given financial support to the Rio Grande Dam and Irrigation Company should not meet with injustice. The litigation this company has been involved in for nearly four years has had such a disastrous effect upon irrigation interests throughout the arid west seeking financial support that it would be almost impossible to overestimate the consequent loss to this country. For, if the Rio Grande Dam and Irrigation Company could be involved in years of ruinous litigation by the authorities on the ground that the appropriation for irrigation purposes of the waters of the Rio Grande, a nonnavigable river, or its tributaries, might possibly affect the navigability of the main stream near its mouth, some hundreds of miles below, then on a like pretext the water rights of practically every important irrigation undertaking in the arid west could be jeopardized. This fact is fully recognized throughout the West, and it is equally well known that as a result of the attacks upon my company irrigation securities generally have become absolutely unmarketable, the development of millions of acres of the irrigable land in the arid west, on which so much depends, being deferred indefinitely in consequence.

With the exception of the national irrigation works being carried out by the British Government in the Nile Valley, the undertaking of the Rio Grande Dam and Irrigation Company is the most promising, the greatest, and most comprehensive irrigation enterprise of modern times. The physical conditions are exceptionally favorable, and the irrigable area is the largest known, except in Egypt. Further, the topography of the district renders it possible to irrigate the lands of the Rio Grande Valley at an unusually low price per acre. Ample financial support had been secured, and on the strength of the promising future of the company a market for other irrigation companies' securities was gradually being established, notwithstanding the general distrust of Western investments. Unfortunately, the proceedings instituted

by the Attorney-General speedily attained such widespread notoriety that it has now become impossible to place irrigation securities either at home or abroad. Therefore, as the result of these proceedings has been so fatal to Western development, it seems to me desirable that the facts of the case should be formally brought to your notice, and that a brief history of the "Elephant Butte Dam scandal" should be placed on record in your Department.

It has long been recognized that the two things needful to insure the prosperous advancement of the Rio Grande Valley in southern New Mexico and western Texas, admittedly the finest fruit and vine growing section of the North American Continent, are:

(1) A comprehensive and scientific system of irrigation, including suitable and adequate means for conserving the vast volume of flood waters hitherto allowed to flow unused down the Rio Grande; and

(2) A legitimate means of interesting capital in the development of the valley's exceptional agricultural possibilities—so long dormant.

From time to time during the past twenty years and more, various plans have been proposed by local residents for providing an irrigation system on a sufficiently large scale to supply water for the irrigation of the Rincon, Mesilla, and El Paso subdivisions of the Rio Grande Valley. But in vain scheme after scheme was proposed, Government after Government at Washington importuned, and the cooperation of the Mexican farmers on the Mexican side of the river solicited. Finally, after years of effort, and repeated failures at home and abroad, to secure the large amount of capital that would be required to carry out an irrigation scheme that would properly utilize the waters of the Rio Grande Valley, and after Congress had again and again declined to seriously entertain the problem of Rio Grande irrigation, the Rio Grande Dam and Irrigation Company was incorporated under the laws of New Mexico.

Shortly after the incorporation of the company the necessary steps were taken to have the Secretary of the Interior pass upon the company's plans. Complete surveys were made, elaborate maps were prepared, and all the requirements of the Territorial and Federal laws were fully complied with. In due course the company's plans were formally approved by Mr. Hoke Smith, the then Secretary of the Interior under Mr. Cleveland's Administration. Unhappily, the financial depression then general throughout the West rendered it impossible to raise in this country at even the most usurious rates the large amount of capital required to carry out the proposed works. Although large sums were expended in properly presenting the enterprise, every conceivable channel for raising capital was tried without avail. In England the great financial houses protested that British investors had already lost too heavily through investing in the bonds of American companies. It was argued that the finances of the United States were too unsettled; that the laws protecting foreign bondholders were too lax; that the directors of American companies were not, under American laws, sufficiently responsible for good management. Many argued that in the event of the bondholders having to foreclose the so-called alien land act would entail realization at a sacrifice. Financial house after house raised the same series of objections, one and all pointing out that the history of foreign investments in Texas, Kansas, Missouri, etc., tended to show that ignorant and hostile legislation might in the future, as in the past, depreciate, or possibly invalidate, the bondholders' security. While all admitted the obvious merit of the company's undertaking, none would risk investment. To such a deplorable state had the assinine follies of American legislative bodies brought American credit.

All new countries must, in the nature of things, depend upon monetary assistance from without for the development of their resources, and much of America's wonderful progress would have been retarded half a century or more had it not been for the powerful aid of foreign gold. Individuals, communities, and nations borrow, all justly claiming the right to borrow in the cheapest market; but notwithstanding the recognized economic laws—laws as clearly defined and unalterable as any of the other forces in nature—governing the relations of labor, capital, and national resources, American legislators have repeatedly enacted laws openly antagonistic to capital. The result, dear money and consequent financial depression—obvious conditions of cause and effect—have in every instance become immediately manifest. Foreign investors, no longer having confidence in the good faith of American legislatures and Government officials, have largely withdrawn their capital from this country, leaving American bankers, mortgage companies, and other money-lending institutions practically the only source of monetary supply.

It is a lamentable fact, perhaps not known to the majority of our people, that with certain rare exceptions every American enterprise, let its prospects and advantages be never so well proved, is, in Europe, looked upon with suspicion. At one time the term "American" was synonymous with honesty. Few Americans doing business abroad find it so at the present time; quite the reverse.

In view of the almost universal suspicion of American investments, it was not surprising that the Rio Grande Dam and Irrigation Company signally failed to place its bonds. But the directors of the company continued their efforts, being assured of the unanimous support of the landowners in the valley, and realizing that unless early steps were taken to impound the flood waters of the Rio Grande the farmers of the district would for the most part soon be ruined.

Finding that in the then state of the money market it would be impossible to place the bonds of the American company, and being advised that investors abroad would be more likely to intrust their money to the directors of an English company, it was decided to raise the capital necessary for the proposed irrigation works by leasing to an English company the American company's undertaking, the English company to issue shares and bonds secured upon the lease, etc., and in this way provide the capital required.

The best legal advice obtainable was taken as to the legality of the American company's rights, and upon being satisfied that a lease of the American company's undertaking would be valid, an English company was incorporated.

A board of directors was formed, consisting of gentlemen of exceptionally high standing. Capital was underwritten and subscribed largely upon the strength of the high rank and representative character of the members of the board; and in due course the chairman, Col. W. J. Engledue, R. E., an engineer of the highest repute, for many years identified with the Imperial Irrigation Works in India, visited the Rio Grande Valley on behalf of the English investors. On being satisfied by his legal advisers that the American company's titles were unassailable, he made arrangements for the construction of the proposed irrigation works.

Work was begun, and, encouraged by this new Anglo-American enterprise, English investors evinced an inclination to become somewhat less distrustful of American securities. The market for American irrigation bonds generally began to improve, and the long-prophesied era of prosperity for the Rio Grande Valley was at hand, when, without a word of warning, the Federal authorities, at the instigation of the supporters of the so-called international-dam project, instituted proceedings with the avowed intention of invalidating the company's rights and of confiscating the valuable works that were in course of construction. In the absence of any legitimate grounds for attacking the company, the action was based upon the preposterous allegation that the company's works would interfere with the navigability of the Rio Grande. At least, this was the legal ground upon which the Government based its case, but no one, not even the attorneys representing the Government, made any pretense of disguising the fact that the real object of the action was to prevent the construction of works that would render the building of an international dam at El Paso an absurdity.

Bearing in mind that the Federal authorities have for years maintained, in opposition to Mexico's claim for joint control of the river, that the Rio Grande is not a navigable stream; that a joint committee appointed by the Senate conclusively proved the Rio Grande to be nonnavigable in New Mexico; that the late Attorney-General Harmon had declared in an official opinion that the Rio Grande is not navigable; that engineering experts employed by the Government in connection with the Irrigation Bureau had pronounced the river to be nonnavigable; that reservoir sites on the Rio Grande had been thrown open for selection, and that the reservoir selected by this company had been officially approved by the Federal Government, this sudden extraordinary action on the part of the Attorney-General was, to say the least, surprising.

In good faith, or no, a bill was filed in the district court of New Mexico by the United States district attorney, and a temporary injunction was issued restraining the company from proceeding with its construction works. This bill set out three items of complaint:

- (1) That the Rio Grande was navigable at Elephant Butte, where the company's main storage reservoir was to be created; and hence that the company's dam would violate the United States statute prohibiting obstructions in navigable waters.

- (2) That if the Rio Grande was not found navigable at Elephant Butte, yet it was navigable near its mouth (some 800 miles below), and that the company's dam would lessen its navigable capacity at the lower point.

(This wonderful and valuable navigation interest that the Department seeks to safeguard (?) is represented by one old flat-bottomed river boat, the *Bessie*, which only draws 28 inches of water, and which occasionally, with difficulty, succeeds in getting a short distance up the Rio Grande above tide water.)

- (3) That to dam the Rio Grande at Elephant Butte and use the waters for irrigation in the valley below, would result in a violation of the treaty obligations due from the United States to the Republic of Mexico.

This bill and the answer necessarily brought before the court the whole contention of the Mexican Government, and it is the claim on the part of Mexico that it is proposed to satisfy by the construction of an international dam at El Paso, which, presumably, would not prejudice the sacred rights of the *Bessie*. The case was tried with much care and fullness on both sides, occupying the time of the court for three full days, and Judge Bantz, before whom the case was tried, rendered his opinion and judgment, finding against the plaintiff (the United States) on every point and ordered the injunction to be dissolved and the case dismissed.

I would here state that, with the exception of Gen. Anson Mills, of the United States boundary commission, the leading spirits of the international dam scheme are not American citizens nor residents in the United States. The principal supporters of the international project consist of a small coterie holding options over or owning the greater part of the land that would be submerged by the creation of a large storage reservoir at the proposed site near El Paso, also much of the land below that would benefit by the proposed international irrigation works.

Although the company's storage reservoir at Elephant Butte may be made to serve every purpose, namely, supply the whole of the valley of the Rio Grande, above as well as below El Paso, on both the American and Mexican sides of the river, at far less cost than would have to be incurred by the United States in carrying out the proposed international scheme, which would only serve the land below El Paso—less than a third of the whole of the valley—the promoters of the international project and their official backers have not hesitated willfully to misrepresent the objects of the New Mexican Company. Our undertaking to create the largest artificial lake in the world; to impound for the use and benefit of American citizens the vast volume of the Rio Grande flood waters now allowed to run to waste; to make over half a million acres of land, now worthless, equal in value and productiveness to the best lands in southern California; to spend large sums in colonizing the Rio Grande Valley, and in developing its splendid resources; to create a revenue-producing, tax-paying property, capable of providing prosperous homes for thousands of families, has, it would seem, been considered of no value to the nation in comparison with the laudable ambition of the promoters of the international dam project, plotting to deprive the farmers of New Mexico of the means of livelihood.

The bulk of the lands of the Rio Grande Valley are at present without water; the irrigation, such as exists, is inadequate, and the farmers in the valley, to a man, support the company; petitions supporting the company's undertaking, and signed by 90 per cent of the landowners in the valley, have been presented to Congress, but General Mills's ambition to commit the United States to an expenditure of between \$5,000,000 and \$6,000,000, in carrying out a needless and impracticable international dam scheme in the interests of Mexico has apparently been considered of paramount importance by the authorities.

Judge Bantz of the Territorial district court having decided in the company's favor (June 3, 1897), the district attorney appealed to the Territorial supreme court, which, in due course, ruled that—

(1) "Under the treaties with Mexico each republic reserves all right within its own territorial limits. This would have been so upon principles of international law without such reservation. States lying wholly within the United States belong exclusively to it, and the soil within the United States is not burdened with a servitude in favor of Mexico, in respect to any duty to so discharge the water as to promote or preserve the navigability of the Rio Grande.

(2) "It is not the capacity of a stream to float a log or row a boat which renders it a navigable river within the acts of Congress (1890 to 1892), but whether, at regular periods of sufficient duration and in its regular condition, its capacity is such as to be susceptible of beneficial use as a public highway for commerce. The Rio Grande in New Mexico is not a navigable river.

(3) "The power to control and regulate the use of waters not navigable, exercised by States and Territories in the arid West, was confirmed by Congress by the act of 1866, and that power now resides wholly in such States and Territories under the act of 1877 and subsequently; therefore the diversion of such local waters is not a violation of any act of Congress, even though the navigable capacity at a distance below may become thereby impaired." (Vide transcript of record No. 753, the supreme court of New Mexico, July term, 1897.)

These two decisions having been so decisively against the Government, it was naturally assumed that in the face of the evidence given, which was overwhelmingly in the company's favor, the decision of the Territorial supreme court would be accepted as final. But the matter was allowed to drag on until the last moment permissible by law, and then an appeal to the Federal Supreme Court was filed.

The people of the valley petitioned Congress, and urgent representations were made

to the Department explaining the injustice that would be inflicted upon the company and the people of New Mexico if the completion of the works were delayed by an appeal to the Federal Supreme Court. It was pointed out—

- (a) That the plaintiffs had been twice beaten in their own tribunals;
- (b) That the delay that would be occasioned by an appeal to the Federal Supreme Court would leave costly unfinished works to be destroyed by the spring floods, entailing enormous loss; and
- (c) That the Treasury of the Government should not be used to crush legitimate private enterprise, or to deprive American citizens of their just rights.

At first, the company's representatives were given to understand that probably the decision of the Territorial supreme court would be accepted as final, but after much valuable time had been lost—greatly to the detriment of the company's works, which were being seriously damaged by the floods—our attorneys were informed that the Attorney-General had determined to have the case go before the Federal Supreme Court, but that an early hearing would be granted. This was in the autumn of 1897. Subsequently our attorneys were definitely informed that an appeal would come on early in January, 1898. Months passed and they were at last advised that the date of hearing had been fixed for the 10th of October of that year. Again the case was deferred until the 7th of November following. Seven months later, in June of last year, the decision of the Federal Supreme Court was handed down. All points of law were decided wholly in the company's favor, but the question of fact, videlicet, to what extent, if any, the company's works, when completed, would interfere, "substantially," with the navigability, as at present existing, of the lower reaches of the Rio Grande (about 800 miles below the company's dam) was referred back to the lower court for inquiry.

Early in December last the court of inquiry, after taking evidence for nearly twelve days, completed its investigations, and in January last handed down a decision against the Government. The court declared that the company's works would not interfere with the navigability of the Rio Grande.

Prior to the hearing of the evidence we had been advised that the decision of the court of inquiry as to the question of fact would be final, but our advisers had seemingly underestimated the extent of General Mills's influence, for the legal representatives sent out by the authorities—apparently determined to get rid of the company one way or another—at once gave notice of appeal. Also, an application for a new trial was filed, with the object, doubtless, of forcing the company's financial supporters to abandon the enterprise in disgust. The attorneys representing the Government claimed that they had discovered important fresh evidence germane to the case. But our attorneys obtained an affidavit from the gentleman who was to give the "important fresh evidence," in which he declared that all the evidence he had to give had been communicated to the attorneys for the Government before the hearing of the inquiry as to the question of fact. The application for a new trial was therefore dismissed.

Early in May last, the appeal to the Territorial supreme court was heard, and again a decision has been rendered in our favor. One would imagine that now that two courts have pronounced definitely as to the question of fact, the authorities would have the grace to drop the case. But no, despite nearly four years' litigation, during which five decisions have been given in the company's favor, a further appeal to the Federal Supreme Court is threatened. Could anything be more likely to bring American institutions into contempt than this deplorable exhibition of official unwisdom and glaring disregard of public interest? The support afforded the international dam schemers' Machiavellian plot would perhaps be less culpable and offensive to public morals if it did not tend to convince the world at large that the current suspicions of American probity are justified by facts.

Having failed in the courts to invalidate the company's rights, and to confiscate the important and costly works already carried out, largely with capital provided by the British bondholders, the supporters of the international dam project have for sometime been endeavoring to prevent, by legislative action, the completion of the company's works.

Upon one occasion they succeeded in getting a proviso tacked on to an innocent little bill, which was entitled "An act to permit the use of the right of way through public lands for tramroads, canals, and reservoirs, and for other purposes, etc." It provided in substance that none of the existing laws should be so construed as to "authorize the appropriation or storage of the waters of any stream or river, State, interstate, or international, to which others below have right by prior appropriation, or the obstruction or interference with the navigable capacity of such streams or rivers, and such appropriation or storage, obstruction or interference, is hereby prohibited." But the matter was brought to the notice of our attorneys, and they

secured a recall of the bill from the House. Subsequently General Mills succeeded in getting the following proviso inserted:

"That the Secretary of War is hereby authorized to secure in the State of Texas the necessary lands on which to build a dam on the Rio Grande at or near El Paso, in that State. No reservoir for the storage of water shall be built on said river within the boundaries of the Territory of New Mexico without an act of Congress authorizing same."

The bill, with the pending motion, was sent back to the committee, and the company's attorneys ultimately succeeded in having the amendment knocked out.

All of these little schemes having failed, General Mills and his supporters have boldly attempted to defeat the ends of justice and to stultify the decision of the courts by means of the bill (H. R. 9710) introduced by Mr. Stephens, of Texas.

This bill is improperly described. It is not a bill to "provide for the equitable distribution of the waters of the Rio Grande." The clause prohibiting the construction of reservoirs on the Rio Grande in New Mexico implies anything but an equitable distribution of the waters of the river. This bill, if properly described, would have been entitled "A bill to prohibit the construction of the Elephant Butte dam or any other work of a similar character intended for the appropriation of the waters of the Rio Grande or its tributaries for irrigation in New Mexico or Colorado; and also to provide for the cession to the Republic of Mexico of certain lands now forming part of the territory of the United States; and further to provide for the construction of an international storage dam—wholly with funds provided by the United States—at a point near El Paso, where the physical conditions render the cost of construction practically prohibitive."

Although this bill was primarily intended to invalidate the rights of the Rio Grande Dam and Irrigation Company (in order to insure sufficient water for the proposed international reservoir), it is readily seen that the effect of the bill, if passed, would be fatal to the irrigation interests of the entire Rio Grande basin above El Paso, and that by preventing the cultivation of the irrigable lands in New Mexico and Colorado other interests—mining, pastoral, and commercial—of New Mexico and Colorado would be proportionately injured.

This bill not only proposed to inflict a great injustice upon a most deserving class of American citizens, but it is also a glaring absurdity. In the first place, the restrictive clause would clearly be unconstitutional, as it affects vested rights; and secondly, the authorization of the Secretary of State to negotiate a treaty and build a dam is ridiculous in the extreme. Surely General Anson Mills, or Mr. Max Webber, or whoever drew the bill, must have known that the Secretary of State has authority to negotiate treaties, under the direction of the President, without the authority that this bill proposes to confer; and that Congress need not necessarily have any voice in the inception of such negotiations. Besides, it is out of all recognized proceedings to authorize a Secretary of State to construct a dam. And yet, notwithstanding the manifest absurdity and injustice of this ridiculous measure, it seemingly enjoys influential support at Washington.

Needless to say, the official attitude toward the Rio Grande Dam and Irrigation Company has excited, both abroad and in this country, much bitter criticism. Public opinion throughout the West has been both unqualified and emphatic, everyone familiar with the characteristics of the Rio Grande treating the contention that the river is in any practical sense a navigable stream as the height of absurdity. The following excerpts from an editorial in the Denver News would seem to indicate the Western view of Federal justice:

"The big Rio Grande Dam Company in New Mexico, whose construction was stopped by an injunction brought by the Federal Government, is said to be preparing a suit against the United States for damages. There is no question but that the suit brought against the company was an unjust one and was instigated by rival interests. The News freely discussed the issues at the time, and the decision rendered by Judge Bantz in favor of the company, and subsequently confirmed by the supreme court of New Mexico, was approved in these columns. Undoubtedly the irrigation company suffered great loss, but against the United States it has practically no redress. It might bring a suit in the Court of Claims, but if a judgment were rendered in its favor it would have to obtain a special appropriation from Congress. The reluctance with which Congress passes appropriations of this nature is well known. The great-grandchildren of a man with a claim against the Government may realize some benefit out of it, but he never will."

If our own people have so poor an opinion of the morality of the Federal Government, it is not surprising that American investments are viewed with something more than suspicion abroad.

It may be safely assumed that every right-thinking native-born American looks forward to the time when the relations between the United States and Great Britain shall be friendly in every proper sense of the term. But let governments legislate and intend never so wisely, no lasting and true friendship can exist between the two countries so long as the business men, merchants, and others of Great Britain believe that they can not rely upon just and honest treatment at the hands of the American Government or in the American courts. The history of the commercial relations between the two countries during the last twenty years would be sad reading for anyone hopeful for a firm establishment of mutual good feeling between the two countries.

Commercial morality is, perhaps, the supreme test of national good faith, and the bulk of British investors consider commercial immorality as something worse than criminal. It is this point of view that one has to appreciate in order to realize the significance of the almost universal belief that American governments as such and the American people as a people are dishonest. It is no exaggeration to say that the average English man of business, the average English investor, is more distrustful of American institutions and more suspicious of American good faith than of those of any other civilized nation. The British investor, small and large, invests his capital with confidence in commercial undertakings in most parts of the civilized world. American investments alone are now wholly discredited. I do not, of course, refer to Government stocks, or to the first-class securities sponsored by the best American houses.

The widespread feeling of distrust of American undertakings is largely based on a common belief that an English investor rarely receives justice at the hands of American officials. Some time ago, while endeavoring to ascertain the cause of this uncompromising suspicion of American commercial integrity, I communicated with most of the leading British banks and financial institutions. The replies to my inquiries practically voiced but one sentiment. American officials and American courts could not be relied upon for fair dealing. Almost every one of my correspondents seemed to be firmly convinced that throughout America the English investor was considered as legitimate prey. However unwarranted this view may be, it is almost universal throughout Europe; hence the international importance of the Elephant Butte Dam case. A number of the wealthiest men in England—men of the highest social and political standing—are interested in the undertaking as large bondholders. They believe in the enterprise, but they no longer have confidence in the good faith of the authorities at Washington, though none the less determined to fight for their rights.

Most of the failures of American irrigation companies, and they have been many, have been due to the excessively high rates of interest that they have had to pay on capital raised for construction works. The success of the Rio Grande Dam and Irrigation Company's enterprise would have inspired confidence among investors both in this country and abroad, and other American irrigation undertakings would have benefited proportionately. But, as matters now stand, irrigation securities are absolutely unsaleable. So much for the patriotic efforts of Gen. Anson Mills!

The following excerpts from Colonel Engledue's speech at the last annual meeting of the English investors indicate the feeling that the attacks upon the company have engendered in the minds of the English debenture holders, who include such men as Lord Ernest Hamilton, brother of Lord George Hamilton (late first lord of the British Admiralty and now secretary of state for India); the Right Hon. Arnold Morley, a member of Mr. Gladstone's last cabinet; Mr. Samuel Hope Morley and Mr. Howard Morley, the former a director of the Bank of England; Sir William Henry Wills, Bart., M. P.; Sir Frederick Wills, Bart.; Mr. H. O. Wills; Mr. Mark Whitwill, chairman of Lloyd's shipping committee, and a number of others of equally high position in the political and financial circles of Great Britain. Colonel Engledue said:

"As you are aware, * * * the best legal advice obtainable, both in this country and in America, was taken as to the legality of the American company's rights. Shortly after allotment I visited the Rio Grande Valley. Upon being satisfied by our legal advisers that the American company's titles were unassailable, the proposed irrigation works were commenced. Needless to say, at this time it was never for a moment considered possible that American officials in high position could be capable of plotting to invalidate the rights legally acquired—acquired under both the laws of New Mexico and the Federal laws of the United States, and officially confirmed by the Secretary of the Interior under President Cleveland's Administration. * * *

The widespread newspaper support accorded to the company's undertaking attracted the attention of certain people living in Mexico and in and about El Paso to the importance of the company's control of the flood waters of the Rio Grande, and backed by certain influential supporters at Washington these people at once attempted

to obtain powers for carrying through a rival scheme for damming the Rio Grande just below the company's dam.

"The Mexican authorities filed at Washington a claim for several millions of dollars compensation, on the ground that the Mexican farmers on the Mexican side of the river below El Paso were being deprived of water for the irrigation of their lands. Gen. Anson Mills, director of the International Boundary Commission, became interested in the rival scheme * * * and brought every possible influence to bear at Washington with the object of in some way invalidating the company's rights. The result was that just as an important part of the company's works was on the eve of completion the Attorney-General of the United States, in direct violation of every canon of good faith, instituted proceedings against the company. * * * The action was based upon the allegation that the company's works would interfere with the navigation of the Rio Grande. Nothing could be more absurd. The Rio Grande in New Mexico is not, never has been, and can not possibly be made navigable; and considering that a special commission appointed by the United States Senate had reported upon this question and had declared the river to be a non-navigable stream; that reservoir sites on the river had been thrown open by the Government for selection; that the late Secretary of the Interior had officially approved of the company's plans, the attack upon the company can only be characterized as a most flagrant and indecent outrage of justice."

Colonel Engledue, after giving details of the past four years' litigation, continued:

"To still further disgust the company's financial supporters, a bill was introduced in both the House of Representatives and the Senate providing for the construction of the proposed international dam, and by a retrospective clause prohibiting the completion of the company's works. This bill was declared to have the support of both the Secretary of State and the Attorney-General, and seemed to evidence an unwavering determination on the part of the authorities to jockey the company out of its rights. * * * While it seems impossible to believe that Mr. Hay, the present Secretary of State, who received so many courtesies in this country, and who was so universally popular while he was resident here as the American Ambassador at the Court of St. James, could be party to the discreditable attempts that have been made, and are being made, to invalidate the company's rights, the attitude of the Attorney-General would appear to be unmistakably antagonistic to the English bondholders."

Colonel Engledue's remarks but mildly record the intense indignation, and I may say disgust, of the British investors. In fact, at one time the outspoken criticism of the American Government and of things American in general became so bitter and offensive to me as an American that, whilst I could not but recognize the seeming justification for the denouncement of American official methods—methods that in private life would not be tolerated in this or any other country—I felt obliged to resign from the directorate of the board of the English company.

Although I have so far been able to keep the English papers from commenting to any serious extent upon the case, an appeal to the Federal Supreme Court against the decision of the territorial courts as to the question of fact will certainly be considered in Great Britain as conclusive proof of American bad faith, this time in the highest places, and will be commented upon accordingly in the columns of the press.

As before stated, I personally have not been able to bring myself to believe that the heads of departments here could be capable of the bad faith their attitude in the premises would seem to evidence, and as an American (temporarily resident in England) I desire above all things that the general conviction that the American Government is actuated by an unfriendly and dishonest purpose toward the English investors should be proved unwarranted.

The accompanying copy of one of my letters in defense of the Government's action in instituting the proceedings against the company will speak for itself. In this letter I have attempted to justify the injunction served upon the company, and also the action of the Federal Supreme Court in referring the question of fact back to the Territorial court. It is obvious, however, that my arguments will be more than stultified if the finding of the lower court is not accepted as final by the Department of Justice.

Praying that the foregoing statement of our case may lead you to use your influence in favor of justice for my English friends, whom I have unhappily influenced to follow my lead in investing in Rio Grande irrigation,

I am, sir, your obedient servant,

NATHAN E. BOYD.

DEPARTMENT OF STATE,
Washington, August 8, 1900.

NATHAN E. BOYD, Esq.,
The Portland, Washington, D. C.

SIR: I have to acknowledge the receipt of your letter of the 24th ultimo in relation to the litigation that has prevented the Rio Grande Dam and Irrigation Company from completing its works.

The papers and publications mentioned in your letter as accompaniments thereto have also been received.

In view of the complaint made by you of the action of the Department of Justice, and because of the questions of law involved, the Department has referred the matter to the Attorney-General with the request for a report on the same, the result of which will be communicated to you.

In the meantime I beg to assure you that this Department could not sanction or approve any injustice done or threatened to any vested right. The important questions suggested in your letter require, however, the usual reference in such cases to the Attorney-General for a report for the Department's information.

I am, sir, your obedient servant,

ALVEY A. ADEE, *Acting Secretary.*

WASHINGTON, D. C., December 21, 1900.

The SECRETARY OF STATE,
State Department, Washington, D. C.

SIR: Referring to the letter from your Department dated August 8—replying to my communication of the 24th of July last in re the Elephant Butte Dam case—in which it is stated that “the Department has referred the matter to the Attorney-General with the request for a report on the same,” and in which assurance is given that your “Department could not sanction or approve any injustice done or threatened to any vested right,” I beg to say that the people of New Mexico, and those interested with me in the Rio Grande Dam and Irrigation Company, are anxiously awaiting the promised communication from your Department, announcing the result of the Attorney-General's investigation of the charges made in my letter to you of the 24th of July last.

Five courts having decided against the Government in this action, I respectfully submit that it is a gross injustice if the litigation be continued by an appeal to the Federal Supreme Court when it is manifest that such appeal can serve no proper end. The Federal Supreme Court long since decided all points of law against the Government in this case, and only referred the case back to the lower court for an inquiry as to the question of fact, viz: Would the company's works, when completed, interfere “substantially” with the navigability, as at present existing, of the lower reaches of the Rio Grande (about 900 miles below the company's dam)?

After a full investigation as to the question of fact, an investigation extending over twelve days, the court of inquiry determined that my company's works “would not interfere with the navigability of the Rio Grande.” The Territorial supreme court confirmed the finding of the court of inquiry, and it is therefore obvious that an appeal to the Federal Supreme Court against the findings of the Territorial courts can serve no useful purpose.

The vast amount of evidence submitted before the court of inquiry fully negated the contention of the Department of Justice in the premises, and the Territorial supreme court having upheld on all points the findings of the court of inquiry, the Federal Supreme Court must perforce uphold the findings of the lower court. The evidence submitted before the court of inquiry was overwhelmingly in my company's favor. The subsequent attempts on the part of Gen. Anson Mills, of the United States boundary commission, to create fresh evidence have signally failed (fresh evidence, even if created, could not be properly introduced into the case), and unless the Attorney-General intends to attempt to challenge the honesty of the witnesses that appeared before the court of inquiry, and to question the good faith of the judges of the Territorial courts, it is difficult to understand why the findings of the Territorial courts as to the question of fact have not, ere this, been accepted as final. The judges of the Territorial supreme court decided as follows:

“We have examined the record, which is very voluminous, and it shows that the whole matter was thoroughly gone into, and we conclude that the facts as set forth in the findings of the learned judge below are sustained by the evidence, and we adopt the same as the findings of this court. The court [the lower court], in the

findings of fact, found that the proposed acts of the defendants will not substantially diminish the navigable capacity of the Rio Grande within the present limits of navigability. It seems clear to this court [the Territorial supreme court] that the appellant utterly failed to establish the fact that the proposed acts of the defendants would have the effect alleged upon the Rio Grande. * * * It must follow, as a natural consequence, upon the finding that the proposed acts of the defendants will not impair the navigable capacity of the Rio Grande, that the appeal should be dismissed. The only purpose of the appeal in the present condition of the case was to enjoin such acts of the defendants only so far as they might affect that result.

"The application for a rehearing is based upon two propositions:

"(1) The discovery of new evidence between the time of the final submission of the case to the court and the entry of the decree.

"(2) An undertaking on the part of the Government to establish gauging stations along the Rio Grande, below El Paso, for the purpose of accurately measuring the flow of that stream.

"The first proposition is supported by the affidavit of one Frank P. Clark, a resident of El Paso, State of Texas, the affiant stating that in the spring of 1881 he, together with other persons, constructed in the city of El Paso a large rowboat 20 feet long and 6 feet wide, and they placed therein supplies for a prospecting trip, and that Clark and his companions, three in number, embarked in said boat at or near the ferry across the said Rio Grande between El Paso and Juarez; that the Rio Grande was not then at high flood stage, it was flowing a good volume of water ample for their purpose; that they made very quick time, and at the close of the fifth day, May 9, 1881, the party passed the mouth of the Conchos River; that the boat made the whole journey safely, having at all times on the way an ample supply of water, and that in the last stages the volume of water in the stream appeared to be larger and deeper than when they left El Paso, Tex. No evidence or proposed evidence is submitted as to the flow of the river at El Paso subsequent to the departure of this party downstream; whether the same remains stationary in height, as it was upon their departure; whether there was a pronounced rise or fall therein; consequently those proofs, if submitted, would have no effect on the judgment in this case.

"As to the second proposition submitted in support of the application for a rehearing it is a proposal not to produce evidence which already exists, but to create evidence not existing at the time of the trial or of the application. We think no sufficient diligence has been shown by the Government in this case in regard to this evidence. From the time of the issuing of the mandate by the Supreme Court of the United States remanding this case for investigation, the Government took no steps whatever to furnish this evidence. It is not shown in the application why no such steps had been taken. Even during the trial of this case it must have been as much apparent to counsel for the Government that this testimony was required to support the appeal, as it was after the finding of fact came from the trial judge. No mention of the same was made, or any application presented to the court at that time. Again, it is not shown by this application that the result of any such proposed investigation would change the conclusion reached in this case. The Government simply asks that this case be reopened for the purpose of permitting it to make an experiment which it should have made before that time, and the result of which no one undertakes to foretell. * * * But the Government has seen fit to try the case without taking any precautions in this regard, and must be held to the consequences of its neglect. We know of no rule, taking into account even the great public importance of this case, which would authorize this court or the court below to reopen the case under such circumstances. (See *Rogers v. Marshall*, etc.; *Burrows v. Ween* was a case of the trial by the chancellor, as this was, and a similar application was made and denied.)

"The refusal of the court [the lower court] to find the ultimate fact in this case in favor of the Government was, as we have before stated, in full accord with our view of the testimony in this case, and was therefore correct. We find no error in the record, and the decree of the lower court will be confirmed. And it is so ordered."

The people of Juarez, Mexico, have, by resolution in public meeting, withdrawn their opposition to the building of the Elephant Butte dam.

The Chamber of Commerce of El Paso, in September last, passed the following resolution:

"Resolved, That it is the sense of the El Paso Chamber of Commerce that no obstacle should be placed in the way of the project of the Rio Grande Dam and Irrigation Company, but on the contrary it should meet with all encouragement; and furthermore, any enterprise that is intended to provide the people of the Mesilla Valley with a water supply should meet with the support of the people of El Paso; and

"Be it further resolved, That in the matter of the suit now pending against the Rio Grande Dam and Irrigation Company, it is the sense of the Chamber of Commerce

that said suit should be speedily decided, and all litigation pending that interferes with the building of said dam should be settled, and we favor such action by the proper authorities as will result in a prompt settlement of all pending litigation."

The irrigation committee also passed a resolution as follows:

"Resolved, That this committee recommend that the board of directors of the Chamber of Commerce pass resolutions petitioning the State Department at Washington to request the Department of Justice to accept as final the decisions of the supreme court of New Mexico in the case of the Government against the Rio Grande Dam and Irrigation Company."

Both the great political parties in New Mexico, the Republican and the Democratic, inserted planks in their platforms calling upon the Government to drop the case. The plank in the former party's platform reads as follows:

"We condemn the provisions of the so-called Stephens bill, now pending before the Congress of the United States, which bill, in terms, inhibits the people of this Territory from acquiring rights in the waters of the Rio Grande and its tributaries, such as can be and are now being acquired by the inhabitants of Colorado and Texas; which prohibits the use, impounding, and detention for legitimate commercial purposes of the waste waters arising in and flowing through New Mexico, and which removes from the jurisdiction of our Territorial courts litigation over the local rights involved in these momentous questions. We further favor the immediate construction of the Elephant Butte dam."

That of the Democratic party read as follows:

"We are unalterably opposed to the Stephens bill. We further condemn the antagonistic attitude of the McKinley Administration toward the irrigation interests of this Territory. We deprecate, as wholly unwarranted, the pernicious litigation that has for four years, despite five decisions against the Government, prevented the impounding of the flood waters of the Rio Grande at Elephant Butte for the irrigation of the farming lands of the Rio Grande Valley. * * * Thus discouraging private enterprise and driving capital from the Territory."

The Hon. Miguel A. Otero, governor of New Mexico, has called upon the Attorney-General and urged that, in the interests of New Mexico, the findings of the Territorial courts be accepted as final. In fact, it is the universal wish of the people of New Mexico, as well as the wish of the majority of the people of El Paso, that this case be dropped; and a great many believe that the parties responsible for the attacks upon the Rio Grande Dam and Irrigation Company should be held accountable for the injury that has been done to that company and to the people of New Mexico.

The El Paso Daily Herald (Republican), November 16, 1900, stated that "When Gen. Anson Mills (of the International Boundary Commission) went to the City of Mexico last month, he went there to ask the secretary of state and President Diaz to continue their objections to the building of the Elephant Butte and other dams on the Rio Grande above El Paso." Surely, Gen. Anson Mills exceeds his duty as a member of the International Boundary Commission, as an officer of high rank, and as a servant of the United States when he urges the Government of a neighboring country to instruct its minister at Washington to oppose the legitimate use by Americans of the waters of an American river for the irrigation of American lands. As an American citizen I feel that I do not exceed my right and duty when I protest against the conduct of any Federal official who prostitutes his official position by intriguing with a foreign power against the interests of the citizens of any American Territory or State. I maintain that I have as much right as another to enter my protest against measures calculated to bring discredit upon the Government of my country.

I have proved conclusively from data on file in your Department that the party or parties responsible for the compilation of Senate Document No. 229 suppressed important papers that should have been included in that document in accordance with the resolution of the Senate. It is self-evident that these papers were suppressed in the interest of the promoters of the international dam project, and I respectfully submit that the statements contained in my letter to you of the 24th of July last warrant an investigation. Any doubt as to the verity of the statements in my letter of July 24 last may be readily settled by reference to the documents on file in the several Departments.

Again, I submit that the grave charges made by English bondholders and others abroad, impugning the good faith of the United States Government in instituting proceedings against the Rio Grande Dam and Irrigation Company, ostensibly on the ground that the company's works would "substantially" interfere with the navigability of the Rio Grande, but in reality with a view to invalidating rights legally acquired under a previous administration, now considered prejudicial to works proposed to be carried out by the United States Government, call for suitable consideration. These charges against American good faith have of late become somewhat

too common to admit of their being ignored by self-respecting Americans when abroad.

Neither my position in this matter nor my statements relative thereto may be properly dismissed as irresponsible, and I venture to suggest that my introduction to you, personally, sufficiently vouches for my respectability and bona fides.

I have the honor to remain, sir, yours, obediently,

NATHAN E. BOYD.

THE ELEPHANT BUTTE DAM AND STATEHOOD—AN ATTEMPT TO RUIN NEW MEXICO BY ACT OF CONGRESS—DR. BOYD APPEALS TO THE PEOPLE.

"We have also touched upon one sad feature, and it is one which we found little pleasure in handling. That is the shameful corruption which has lately crept into our politics. But I have a great, strong faith in a noble future for my country. A vast majority of the people are straightforward and honest, and this state of things is stirring them to action. If it would only keep on stirring until it became the habit of their lives to attend to the politics of the country personally, and put only their very best men into positions of trust and authority! That day will come."—(Mark Twain's preface to "The Gilded Age.")

To the People of New Mexico:

The above quotation should commend itself to the citizens of New Mexico, particularly at the present time.

The grave danger to the Territory arising out of the discreditable efforts on the part of the promoters and official supporters of the so-called international dam project to destroy the water rights of the people of New Mexico, a danger that threatens the most vital source of prosperity for the Territory, has again been made manifest by the action of the Senate Committee on Foreign Relations in reporting favorably on the Culberson bill—a counterpart of the bill introduced in the House by Mr. Stephens, of Texas.

The Culberson-Stephens bill is a menace to the future development of New Mexico that has not been sufficiently appreciated. It is no exaggeration to say that this bill is deliberately intended to destroy the most valuable rights of our Commonwealth, rights upon which our future prosperity must very largely depend—the keystone of the only arch that adequately can support a superstructure of advanced and permanent civilization.

History has shown that the highest forms of civilization the world has known were the outcome of physical conditions that rendered irrigation imperative. Where irrigation is practised, small holdings and intense cultivation obtain; a condition constituting a happy combination of town and country life, and favorable to the development of the noblest social institutions. In the Valley of the Nile there is but little more than 5,000,000 of acres of land under cultivation; every acre of it irrigated. And as a result, Egypt has been a landmark in the world's history for thousands of years. In the Rio Grande Valley in New Mexico, as in the Valley of the Nile in Egypt, the irrigable lands have a potential value infinitely greater than that of any other source of wealth. The highest-priced and most productive farms on this continent are in districts where irrigation is practised, and the largest yield known of nearly every staple crop has been obtained by irrigating with the fertilizing waters of the Rio Grande—the American Nile."

The United States annually produces more precious minerals than any other country in the world, but the annual value of the wheat crop of Minnesota alone considerably exceeds the annual value of the output of all the mines in the United States. Colorado leads all the States of the Union in the production of precious metals, but the value of the products of her farms is nearly double that of her mines.

New Mexico is rich in mineral wealth. Valuable and productive mines have long been worked in the Territory, and having regard to the geologic formation, it is safe to assume that nature's distribution of precious minerals, as found in Colorado, extends with equal prodigality southward through New Mexico. Mines of enormous productivity are found in southern Colorado, Arizona, and Mexico. Nature is not restrained by arbitrary geographic lines. The laws of geology and probability afford strong presumptive evidence in support of the theory that New Mexican mines will, in the relatively near future, be found to be equally as productive as those of Colorado, Arizona, or Old Mexico. But be the mineral and pastoral possibilities of New Mexico never so great, the fact remains that if the irrigation rights of the Rio Grande Valley be adequately safeguarded the agricultural resources of the Territory must

ever remain her greatest source of wealth. The waters of the Rio Grande, if properly utilized, will render a vast area of unsurpassed fertility susceptible of the highest and most profitable form of cultivation. Deprive New Mexico of her natural and inherent right to utilize the waters of the Rio Grande for irrigation purposes, and she is robbed of the chief element essential to her material progress.

The hydrographic condition in New Mexico is such that the waters of the Rio Grande constitute her most valuable asset. Safeguard her right to impound the waters of this river—"the Nile of America"—and every interest of the Territory will benefit. The cultivation of the farm lands of the Rio Grande Valley will not only directly enrich the farmer, but it will create a market for our factories and commercial undertakings, support our railways, insure capital for the development of our mines, stock ranches, and lumber camps, each drawing support from and contributing to the prosperity of the others. It must be obvious to every thinking man that the valuable rights threatened by the Culberson-Stephens bill and by the iniquitous attack upon the Elephant Butte dam undertaking are not important to one locality or to one interest only. The people of the Territory, as a whole, are both directly and indirectly interested in the Elephant Butte dam case, and, as an entire people, they should unite and actively assist me in my defense of our rights.

I fully recognize that I have long had the sympathy of the people of New Mexico, that practically every man, woman, and child in the Territory with any knowledge of the Elephant Butte dam enterprise condemns the attitude of the Attorney-General in this case. But notwithstanding their earnest wishes for a speedy vindication of our legal rights, the fact remains that I have not received the organized support the importance and merit of the Elephant Butte case warrants. With the exception of the splendid services rendered by our attorneys, Judge Fall and Judge Newcomb, of Las Cruces, and Mr. W. A. Hawkins, of Alamogordo, and of the hearty cooperation I have received at the hands of Mr. Henry Bowman and Dr. John M. Yair, of Las Cruces, and certain other gentlemen who have assisted in their private capacity, the people of the Territory have not stood by me as energetically as they ought to have done.

It is true that when Mr. Stephens introduced his bill in Congress, Governor Otero issued a proclamation calling a convention to send delegates on to Washington to protest against the clauses in the bill prohibiting the impounding of the flood waters of the Rio Grande for irrigation above the site of the proposed international dam at El Paso. This was a step in the right direction at last, and the representations made by the several members of the delegation, especially the able arguments put forward by Judge Fall when he appeared before the House Committee on Foreign Affairs, bade fair, for the time being at least, to have the desired effect. The supporters of the international-dam project at once loudly proclaimed their intention to withdraw the objectionable clauses. In fact, their solicitude for the welfare of the farmers in the Rio Grande Valley above El Paso became something quite pathetic.

Far be it from the promoters of the international-dam scheme to wish for anything that would redound to the disadvantage of their dear friends in New Mexico! They had no desire to deprive the people of New Mexico of their right to the waters of the Rio Grande! Oh, no! They only sought to have the Government build a dam at El Paso, and then these good, unselfish, disinterested speculators would at once seek to provide water for the irrigation of the lands in the valley above El Paso. Perhaps they intended that Providence, in recognition of their unselfishness, should at once ordain that New Mexico be blessed with a bounteous annual rainfall. Or perhaps our very good friend, Señor Bombados, and his associates, looking forward to the enormous profits they would derive by the sale of lands to the Government for reservoir purposes, and by other means of plundering Uncle Sam during the construction of the international dam, expected to make good their promises to the people of New Mexico by supplying water to the valley above by means of pipe lines from El Paso's present supply tanks on Reservoir Heights. They evidently contemplated supplying the valley above El Paso by making water run up hill, one way or another, for we have their own word for it that they never, never intended to deprive the people of New Mexico of water.

In all seriousness, it is perfectly clear that so far as the Anson Mills-Morehead-Magoffin-Hart combination is concerned, the main object was to lull the people of New Mexico into a false sense of security. Messrs. Mills, Hart, and Morehead knew perfectly well that if a bill could be passed through Congress, whether the clauses objected to by Governor Otero's delegation be struck out or not (authorizing the construction of an international dam in the canyon above El Paso), the authorities would then, one way or another, find a means of prohibiting the impounding of the flood waters of the Rio Grande in New Mexico—possibly in Colorado also. The fact that the "prohibitive" clauses were allowed to stand in Mr. Culberson's bill can

only be viewed as a carefully planned political move. They, at least, were not blind to the fact that no matter how influential their political friends and backers at Washington may be, the Culberson-Stephens bill will be sure to meet with opposition in Congress. This they hope to circumvent by a gracious compromise. That is, the clauses prohibiting the impounding of the flood waters of the Rio Grande in New Mexico and Colorado would be withdrawn, with much parade of fairness, as a "sop to Cerberus," *knowing that once the Government be committed to the building of an international dam at El Paso, Congress would be certain subsequently to entertain favorably a proposal to prohibit any use of the flood waters of the Rio Grande above the international dam.*

In calling attention to the ulterior motive of the promoters of the international dam, I do not wish to lead anyone to infer that the citizens of El Paso—I mean those not directly interested financially in the Anson Mills-Morehead-Magoffin-Hart combination—have at any time been actually opposed to the Elephant Butte enterprise. For it is a well-known fact that in 1893, when the Elephant Butte undertaking was first organized, the people of El Paso cooperated with me in every way possible. In fact, they contributed nearly \$10,000 toward the expense of our first preliminary surveys. The intelligent business men of El Paso naturally recognized that it would be much more advantageous for their city to have a great storage reservoir created at Elephant Butte, which could be made the means of providing water for the irrigation of the Rio Grande Valley above El Paso, as well as below, than it would be to have a storage dam built in the canyon above El Paso, which could only be made to provide water for the El Paso subdivision of the Rio Grande Valley, which contains less than a third of the acreage that may be irrigated from the Elephant Butte site.

Further, the more enlightened people of El Paso realized the danger of having a great storage reservoir just above the city, *where it is impossible to secure a proper rock foundation for a storage dam 95 feet or 100 feet high.* Thoughtful men also recognize that a large lake of relatively stagnant water just above the city would inevitably ruin the city's reputation as a famous health resort. No; the opposition to the Elephant Butte Dam has not come from the people of El Paso, but from the Anson Mills-Morehead-Magoffin-Hart combination. These men, long supported by the El Paso Times, are alone responsible for the inception of the action that was instituted with the object of depriving New Mexico of her justly inalienable rights. That they succeeded in misleading many of the people of El Paso, as they misled the heads of the Departments at Washington, can not be denied. The fact that, owing to the influence of interested parties, El Paso contributed large sums to the fund employed in the fight against the Rio Grande Dam and Irrigation Company, some hundreds of dollars of which was voted by the municipal council (I understand that Mr. Max Weber claims to have contributed over \$40,000 toward the promotion of the international dam), in no wise incriminates the people of El Paso as a whole. The responsibility rests solely with certain leading men, although the people of El Paso as a whole can not be held entirely blameless, their apathy and their indifference to the rights of the farmers of the valley above, upon whom the merchants of El Paso so largely depend, hardly being to their credit.

If the best people in El Paso and New Mexico had organized a counter movement four years ago, when the international dam schemers first became so aggressively active, the attacks in the courts upon my company would have ceased long ago. By now, the great storage dam at Elephant Butte would be un fait accompli, and the international dam scheme would be an almost forgotten dream of its ill-advised promoters. Some \$4,000,000 or more would, ere this, have been expended in developing the splendid resources of the Rio Grande Valley, and thousands of farmers, with success assured, would now be contributing to the wealth of New Mexico and to the commercial prosperity of El Paso. Verily, the unwisdom and the cupidity of Gen. Anson Mills, Mr. Juan Hart, Mr. Morehead et al., are responsible for much evil.

It seems to me so very important that the people of New Mexico be thoroughly informed of the exact nature of the danger that now threatens the Territory, through the machinations of Gen. Anson Mills and his associates, that I venture to set forth, as briefly as may be, some of the essential details of the "Elephant Butte dam scandal."

In 1893, when I first became interested in the development of the Rio Grande Valley, I found both the people of New Mexico and the citizens of El Paso anxious to assist me in every way possible. For years, the people of the valley had, in vain, endeavored to interest capital in Rio Grande irrigation. Government aid had again and again been asked, and the cooperation of Mexico solicited, without avail. It is true that the Government had investigated the question, and had set aside certain reservoir sites in New Mexico; that the Irrigation Bureau had recommended the

building of certain storage dams on the Rio Grande, but nothing further had been accomplished. Having studied many of the great irrigation works and districts of the world, I at once recognized the immense possibilities of the Rio Grande Valley as a field for a great irrigation and colonization enterprise. The exceptional, I may say unequalled climate, the wonderful fertility of the alluvial lands along the Rio Grande, and the remarkable fertilizing properties of the waters of that river, offered advantages enjoyed by no other part of America. Hundreds of thousands of acres of fertile soil, an abundance of water, with an ideal climate, were available. All that was needed was a comprehensive system of irrigation works, in order to create a veritable "Garden of Eden." For once water for the irrigation of the rich alluvial lands of the valley were assured, there could be no difficulty whatever in colonizing the valley with a most desirable class of settlers.

If the acreage irrigable from the Rio Grande were ten times what it is, every acre could within less than ten years be settled and brought under close cultivation. I have visited almost every part of the civilized world, and I have no hesitation in saying that, granting that we may protect our right to water from the Rio Grande for the irrigation of our lands, I would rather make my home in New Mexico than in any other country on earth. Nowhere else have I found an equal combination of favorable conditions for the creation of a great and prosperous community; nowhere else have I found equal climatic conditions, taking it the year round; in no other country can the same "physical joy of life" be experienced. Knowing that, if properly presented, capital could be raised at a price that would not be prohibitive for the construction of the irrigation works essential to the proper development of the Rio Grande Valley, and believing that the future promised great prosperity for the Territory, I determined to make New Mexico my home, and devote, if need be, the best years of my life to the great work of colonizing and developing on a comprehensive and liberal scale the lands of the Rio Grande Valley below Elephant Butte.

All the requirements of the Territorial and Federal statutes were complied with, in order to legally establish the rights essential to the company's undertaking, and as the then condition of the money market in this country rendered it impossible to raise the large amount of capital required to carry out the proposed works, I went abroad in 1894 with a view to placing the company's bonds in Europe. Unfortunately, the suspicion of American investments, especially irrigation securities, had become so universal that, notwithstanding large sums were expended in properly presenting the enterprise to capitalists, none would risk investment, although all admitted the obvious merit of the undertaking.

In England the directors of a public company are personally responsible to the investors for good management, and finding that investors abroad would be more likely to intrust their money to an English board of directors, an English company was formed to issue 8 per cent preference shares and 5 per cent bonds to be secured by a lease of the American company's undertaking. A highly influential board of English gentlemen, who extensively invested in the enterprise, was secured, and largely on the strength of the high rank and representative character of the members of the board, the necessary capital was underwritten and partly subscribed. Col. W. J. Engledue (of the Royal Engineers), an authority on irrigation engineering, for many years identified with the Imperial irrigation works in India, came over on behalf of the English investors and fully investigated the titles of the American company and the engineering features of the enterprise.

Work on the proposed dams and canals was begun. A great colonization system was organized. Enormous sums were expended on elaborate and costly printed matter descriptive of the Rio Grande Valley and of the resources of the Territory. Branch offices and agencies were established in the large cities of Great Britain and on the Continent; the company's illustrated literature was translated into French and widely circulated. Contracts for the sale of large blocks of land for fruit and vine culture were entered into, the company undertaking to provide water within two years. Everything conducive to success that good management could suggest, and capital provide, was carried out. Widespread interest in the enterprise in particular, and in the resources of the Territory in general, was aroused, and over four thousand applications for land (so soon as water could be supplied) were received at the London office when, without a word of warning, the Federal authorities, at the instigation of the promoters of the international dam scheme, instituted proceedings with the avowed intention of invalidating the company's rights, and of confiscating the valuable works that were in course of construction.

In the absence of any legitimate grounds for the action, it was based upon the preposterous allegation that the company's works would interfere with the navigation of the Rio Grande in New Mexico. Later, the plaint against the company was amended, the items being:

(1) "That the Rio Grande is navigable at Elephant Butte, where the company proposed to create its main storage reservoir, and that consequently the company's dam would violate the United States statute prohibiting obstructions in navigable waters.

(2) "That if the Rio Grande is not navigable at Elephant Butte, yet it is navigable near its mouth (some 900 miles below), and that the company's dam would lessen the navigable capacity of the river at this lower point."

(Parenthetically, it may be stated that this wonderful and valuable navigable interest the Department desired to safeguard (?) is represented by one old flat-bottomed river boat, the *Bessie*, which only draws 28 inches of water, and which, occasionally, with difficulty, succeeds in getting a short distance up the Rio Grande above tide water.)

(3) "That to dam the Rio Grande at Elephant Butte, and use the waters for irrigation in the valley below, would result in a violation of the treaty obligations due from the United States to the Republic of Mexico."

The Government's bill of complaint, and the answer thereto, necessarily raised the question of Mexico's claim against the United States (now amounting to over \$35,000,000), and the alleged *raison d'être* of an international dam at El Paso, which, strangely enough, the authorities seem to think could not interfere with the alleged navigability of the Rio Grande, and thus prejudice the sacred rights of the *Bessie*.

Bearing in mind that the Federal authorities have for years maintained, in opposition to Mexico's claim, that the Rio Grande is not a navigable stream, and that therefore the use of the waters of the river by American citizens in Colorado and New Mexico is not a violation of the Guadalupe Hidalgo and Gadsden treaties; that the late Attorney-General Harmon, in response to an official request for an opinion, had officially declared the river not to be navigable in the sense claimed; that engineers employed by the Government had selected reservoir sites on the Rio Grande for irrigation in New Mexico; that these reservoir sites had been subsequently thrown open for appropriation; that the company's selection of a reservoir site at Elephant Butte had been officially approved by the Secretary of the Interior, at whose request the company's plans had been slightly altered, the action of the Department of Justice, in instituting proceedings as above against my company, can only be described as "a gross and indecent outrage of justice."

The correspondence on file in the departments at Washington proves conclusively that when Gen. Anson Mills first sought to prevail upon the authorities to take action against the company our rights were declared by the then Attorney-General, the Secretary of the Interior, and others consulted, to be unassailable. It was not until later that the Secretary of War was beguiled into stating that if the Rio Grande were a navigable stream the company's rights had not been properly acquired, inasmuch as we had not sought and obtained his department's approval. Naturally the department then referred to the United States Boundary Commission for information as to the navigability of the Rio Grande. This, of course, was just what Gen. Anson Mills wanted, and he promptly reported that the Rio Grande is navigable in New Mexico and below El Paso. Backed by this official and alleged expert opinion, the Attorney-General instituted proceedings.

As most of your readers are probably aware, the Territorial courts in due course found in the company's favor, and on the 10th of October, 1898, the first appeal to the Federal Supreme Court against the findings of the Territorial courts was heard. The Federal Supreme Court decided all points of law in the company's favor, but referred the case back to the lower court for inquiry as to the question of fact, viz, would the company's works, if completed, "substantially" interfere with the navigability "as at present existing" of the lower reaches of the Rio Grande?

In December, 1899, the court of inquiry devoted some twelve days to the consideration of evidence as to the question of fact, and on the 3d of January following the decision of the court was handed down. The court found that "the company's works would not interfere with the navigability of the Rio Grande."

The legal representatives sent out by the Department of Justice to assist the United States attorney attempted to have the case reopened (anything to keep the case tied up in the courts seems to be desirable in the eyes of the Attorney-General), but the court dismissed the application for a new trial. The Government then a second time appealed to the Territorial supreme court.

On the 3d of May last this appeal was heard and the findings of the lower court were fully upheld, the court, in its decision, even going to the length of implying that the attempt on the part of the Government to create and introduce fresh evidence, with a view of having the case sent back for retrial, was unwarranted and without precedent.

Before the sitting of the court of inquiry, in December, 1899, an agreement was signed by the United States attorney and the two attorneys sent out by the Depart-

ment of Justice undertaking, in the event of the Government appealing to the Federal Supreme Court, to expedite the hearing of such appeal in every way possible. This was over a year ago, but the Attorney-General did not order an appeal until just before the Presidential election, and this order was suppressed for the time being, evidently for political reasons. In fact, our attorneys have not as yet received formal notice of appeal and we only learned of it through the United States attorney incidentally mentioning the fact to one of our attorneys in the course of conversation sometime last month. That this second appeal to the Federal Supreme Court can serve no proper end, and has not been made in good faith, must be obvious to any unbiased mind.

The fact that over a year ago, and again just recently, Judge Burch, the representative of the Attorney-General, suggested a compromise is also significant. Compromise what? The navigability of the Rio Grande? For be it remembered that the Government case is based solely upon the question of navigation, all the other items in the original bill of complaint having been already settled in the company's favor beyond appeal by the Federal Supreme Court. The one question of fact, the possible effect of the company's works upon the navigability of the Rio Grande, was referred to the lower court for inquiry, and this fact the Territorial courts have already determined.

Upon both occasions when a compromise was suggested I declined to consider the proposition. To begin with, the Department of Justice has no power or authority to enter into any agreement with me that would be binding upon the Government as such. The courts have entirely and absolutely upheld our rights, the statements in the report on the Culberson bill by the Senate Committee on Foreign Relations notwithstanding, and the Attorney-General, if he seeks to do his duty, can drop the case, or if he desires to still further play into the hands of the promoters of the international dam, he can prostitute his office and carry the case to appeal; that is all. There is no feature in the pending litigation that admits of a compromise. Our rights have been attacked on a false issue, and not in good faith. We have defended our rights. And incidentally we have also, during the four years of litigation that have been so unjustly forced upon us, protected from official spoliation the most valuable asset of New Mexico.

The vast amount of evidence submitted before the court of inquiry having been wholly in our favor, and the supreme court of the Territory having upheld on all points the findings of the learned judge of the lower court, it is manifest that the appeal to the Federal Supreme Court has been made with the sole object of tying the case up in the courts in the interests of the international dam schemers. Hence the repeated offers to compromise, not in the interest of navigation, but in the interest of the international dam.

Even if a compromise were proposed on lines satisfactory to me in my private capacity by the State Department, the only Department with authority to enter into negotiations for a compromise, I would not be justified in agreeing to any conditions that could or would in the slightest degree prejudice the rights of the Territory. Whilst I am prepared to consider any proper proposal that may be put forward by the State Department, I can not and will not consent to any terms or conditions, no matter how advantageous to me personally, that would concede, in principle, that the power to control and regulate and use the waters of the Rio Grande does not belong, by inherent and inalienable right, to the people of New Mexico in the same way that similar rights are exercised and enjoyed by the peoples of the several States of the Union. Having cast in my lot with New Mexico, I can not in honor be a party to any compromise which, in principle, admits that the diversion of the waters of the Rio Grande for irrigation and other purposes in New Mexico is in any sense a violation of any act of Congress, or which concedes that the soil of New Mexico is burdened with any servitude in favor of Mexico in respect to any duty to so discharge the waters of the Rio Grande as to promote or preserve the navigability of that stream 800 or 900 miles below our southern boundary.

As further evidence of the disposition of the Attorney-General in this case I may mention that Mr. Hay, the Secretary of State, during an interview that I had with him last summer, informed me that when the Stephens bill was first submitted to him he had consulted the Attorney-General and asked if there was anything in the pending litigation with my company that rendered such a bill improper, or words to that effect, and that the Attorney-General had returned the bill with a reply in the negative. Now, as this bill proposes to confiscate our vested rights, to say nothing of destroying the inherent rights of the Territory—rights that, so far as the company is concerned, were confirmed by a Secretary of the Interior, and which five courts have since upheld—and as the Attorney-General must know that, in the circumstances, a further appeal to the Federal Supreme Court can have but one result—a

result inevitably in our favor—it is difficult to conceive the object of his reply to the Secretary of State. He must know that there is no precedent that can justify the introduction of fresh evidence, *created* since the question of fact was decided by Judge Parker over a year ago, and unless he contemplates *impeaching the judges of the Territorial courts* what possible object, not an unworthy one, can there be in dragging the case on by a further appeal? I am naturally reluctant to believe an Attorney-General of the United States capable of acting in his official capacity with a dishonest motive, but no other deduction seems possible in the present instance.

I may mention here that in October last I sought an interview with the Attorney-General, with a view to inducing him, if possible, to listen to reason and to consider the wishes of the people of New Mexico and El Paso. For my pains I was informed that I “did not know what I was talking about,” and I was accused of “besmirching the character of that honorable officer, Gen. Anson Mills.” An honorable officer forsooth! Well, it may be honorable in the estimation of the Attorney-General for an officer of the United States Army, who happens also to be a director of the United States Boundary Commission, to intrigue with a foreign Government against the rights of American citizens; but in my opinion most Americans are somewhat more old-fashioned in their views as to what constitutes honorable conduct in officers of the United States Army. According to the El Paso Daily Herald of the 16th of last November, “When Gen. Anson Mills went to the city of Mexico last month (October) he went there to ask the secretary of state and President Diaz to continue their objections to the building of the Elephant Butte dam and any other dams on the Rio Grande above El Paso.”

Surely Gen. Anson Mills exceeds his duty as an “honorable officer” of high rank, as director of the International Boundary Commission, and as a highly paid servant of the United States, when he urges the Government of a neighboring country to instruct its minister at Washington to oppose the legitimate use by American citizens of the waters of an American river for the irrigation of American lands. Such conduct may be fit and proper in the estimation of Mr. John W. Griggs, Attorney-General of the United States, but as an American citizen, jealous of my country's honor, I hold that I do not exceed my right or my duty when I protest, as I have done, and as I shall continue to do, against such conduct. I maintain, and I am glad to believe that most Americans will accept my view of the position, that I have as much right as another to protest against conduct or measures that can not fail to bring discredit upon the Government of my country.

Notwithstanding the Attorney-General's denial that Gen. Anson Mills has been in any way responsible for the proceedings instituted by the Government against the Rio Grande Dam and Irrigation Company, a denial that, having regard to the known facts of the case and the correspondence on file in the various departments at Washington, was puerile in the extreme, I have no doubt but that the people of New Mexico will continue, as I do, to hold Gen. Anson Mills responsible for the attacks upon the Elephant Butte enterprise and the consequent four years of costly litigation. It would be interesting to know if the Attorney-General also denies that Gen. Anson Mills is responsible for the Culberson and Stephens bills.

Correspondence on file in the departments at Washington fully establishes the verity of my statement that it was Gen. Anson Mills who, in the first instance, deliberately misled the authorities into instituting proceedings against my company, and when the proper time comes it will not be difficult to show that Gen. Anson Mills was directly responsible for the attacks upon our Territorial rights in the Culberson and Stephens bills.

Whether Gen. Anson Mills is responsible for the inception of the attacks against my company, or not, the fact remains that the Government has deliberately attempted to destroy the irrigation rights of New Mexico in the interests of the international dam project, and that, failing in the courts, our rights are now, and not for the first time during the past four years, threatened in Congress. That is to say, the supporters of the international dam scheme, having failed to invalidate our rights in the courts, now seek to prohibit by act of Congress the use of the waters of the Rio Grande for irrigation in New Mexico. This is my chief justification for making this appeal to the people of New Mexico for their active cooperation.

For four years I have protected, wholly at my own expense, the most vital interests of the Territory, and I now call upon my fellow-citizens to join me in defense of our rights. I am prepared in the future as in the past to do my part, but I respectfully submit that at the present critical moment it is the duty of the Territorial administration, and of the people of the Territory, to come forward and do their part, without regard to party fealty or hope of political advantage.

Another convention should at once be called, and a delegation of representative men should be sent on to Washington to assist me in defeating the Culberson and

Stephens bill. A petition should be energetically circulated, and should be signed, if possible, by everyone in the Territory from Governor Otero down. This petition should protest against the iniquitous measure proposed by the supporters of the international dam, and against the pernicious litigation that has, for over four years, deprived the farmers of the Rio Grande Valley of water for the irrigation of their lands. The time for concerted action has come, and I urge the people of the Territory to act promptly and with all possible energy. For I would point out that it is not by the Culberson and Stephens bills alone that the irrigation rights of New Mexico are threatened. The international dam schemers unquestionably have powerful support at Washington. This is evidenced by the misleading character of the report, on the Culberson bill, by the Senate Committee on Foreign Relations. This report is the outcome of much that has gone before, and is largely based upon Senate Document No. 229 (Fifty-fifth Congress, second session), which was compiled in response to a Senate resolution of February 22, 1898, which called upon the President:

* * * "to transmit to the Senate the proceedings of the International Commission authorized by the concurrent resolution of Congress of April 29, 1896, and the correspondence on file in the departments relating * * * to the equitable distribution of the waters of the Rio Grande."

Now the parties responsible for the compilation of the above Senate document omitted every important paper that militated against the international dam project, or that was favorable to the company. Even the opinion of Attorney-General Harmon, the one definite and authoritative official document germane to the question, was suppressed. Who was responsible for this? Who was responsible for the peculiarly artful wording of the report of the Senate Committee on Foreign Relations? Having regard to the whole history of the international dam project, can anyone doubt that it was Gen. Anson Mills, or his supporters? Long before the introduction of the Stephens bill the supporters of the international dam project repeatedly attempted to prohibit, by legislative action, the impounding of the flood waters of the Rio Grande in New Mexico. Upon one occasion they succeeded in getting an amendment tacked onto an innocent little bill, which was entitled: "An act to permit the use of the right of way through public lands for tramroads and canals, and for other purposes, etc." The amendment provided that none of the existing laws should be so construed as to—

"Authorize the appropriation or storage of the waters of any stream or river, State, interstate, or international, to which others below have right by prior appropriation, or the obstruction or interference with the navigable capacity of such streams or rivers, and such appropriation or storage, obstruction or interference, is hereby prohibited."

Fortunately the matter was brought to the notice of our Washington attorney, Mr. J. H. McGowan, and he secured the recall of the bill from the House. But the friends of the international dam scheme were not to be so easily defeated, and they subsequently succeeded in having the following amendment tacked on:

"That the Secretary of War is hereby authorized to secure in the State of Texas the necessary lands on which to build a dam on the Rio Grande at or near El Paso in that State. No reservoir for the storage of water shall be built on the said river within the boundaries of the Territory of New Mexico without an act of Congress authorizing same."

But here, again, our attorney defeated the enemy by having the bill sent back to committee, where the amendment was dropped. I mention these two cases in order that the people of New Mexico may be brought to the full realization of the immense importance of the splendid services to the Territory that our attorneys have rendered. It is obvious that either of the above amendments might have passed without anyone noticing their sinister purport, especially as they were tacked on to noncontentious measures, not of a character to arouse discussion or to meet with opposition in either House or Senate.

One of the important facts that the history of the Elephant Butte dam case emphasizes is this: Just so long as New Mexico remains a Territory, just so long will her rights be in danger. If there is any one of our citizens who has heretofore had any doubt as to the desirability of statehood, surely the outcome of the international dam scheme must convince him that in statehood alone lies safety. If New Mexico had attained statehood five or six years ago, the attacks upon the Rio Grande Dam and Irrigation Company, and upon the irrigation rights of the Territory, would never have been made, and by now the wealthy capitalists who joined me in financing the parent company would have had so large an interest in the Territory that they would naturally have been led to invest in other Territorial undertakings.

The resources of New Mexico are so great, the openings for the profitable investment of capital so numerous, that other investors, both in this country and abroad,

would have followed our lead. The full completion of our works at and below Elephant Butte, with the development of various incidental industries by subsidiary companies, would ere this have brought between four and five million dollars into the Territory, and the extensive advertising my company's printed matter would have given to New Mexico would have attracted capital from all parts of Europe and America.

From the day I determined to identify my future with that of New Mexico I have devoted my energies chiefly to two objects—capital for the development of our splendid natural resources, and statehood. Last summer I submitted to the leaders of both the great political parties a plan for attaining statehood which, if it had been adopted, could hardly have failed of success. Many of my friends in both parties will remember how urgently I advocated the submission of a constitution for ratification by the people on the 6th of November last, when none of the leaders of either party would have dared, for personal reasons, to actively oppose statehood. As early as last June I urged that a constitutional convention should be called to amend, so far as might be found necessary, the constitution drafted in convention a few years ago, in time to have the same submitted to the people for adoption on the 6th of November.

Unfortunately, it was not until the Democratic and Republican conventions met at Santa Fe, on the 3d and 4th of October last, that any considerable number of the Republican and Democratic party leaders agreed to the proposal that the two parties should each embody in their platforms an identical plank pledging the parties, respectively, to support and advocate the adoption of a constitution to be submitted on the following 6th of November, and undertaking that both the Republican and Democratic members elected to the coming legislative assembly of the Territory should be pledged to vote an appropriation for the payment of all reasonable expenses that might be incurred by a constitutional convention and by a delegation to be sent on to Washington to advocate before Congress the admission of New Mexico into the sisterhood of States.

Although most of the delegates to the two conventions were seemingly favorable to the proposition, it was thought by some that there would not be sufficient time in which to prepare a constitution for submission for ratification on the 6th of November. The result was that the active opposition of one or two of the party leaders defeated the proposal.

Knowing there was not the slightest possibility of an enabling act of the usual kind being passed during the present short session, and fully recognizing the vital importance of New Mexico's early admission as a State, it was a great disappointment to me that the plan proposed was not adopted. For if a constitutional convention had been called in time to prepare a constitution for submission to the people on the 6th of November last, when none of the party leaders on either side would have dared to risk political extinction by opposing its ratification, there is no doubt whatever that the constitution would have been indorsed by the people of the Territory, and that Congress could have been induced to approve and ratify the same this session. It was an opportunity not likely to happen again in a quarter of a century or more. A Republican Senate and a Republican House, in conjunction with the largest Republican majority ever polled in the Territory, would have rendered statehood a certainty, if the plan proposed had been adopted.

With all three Territories seeking to have enabling acts passed, the present short session offers very little chance of success for any one of them. But New Mexico's claim for statehood is more imperative than that of either of the other Territories. She has been entitled to Statehood for half a century, and if a Republican governor, supported by a strong delegation composed of seven or eight leading Republicans and an equal number of Democrats were to visit Washington with a suitable constitution ratified by the people of the Territory, and ask a Republican Senate and a Republican House to approve such constitution, the request, if properly presented and adequately urged, could not fail to receive a favorable response.

Statehood is admittedly desirable and necessary to the progress of New Mexico, and I most strongly urge that the Territorial legislature proceed at the earliest possible moment to pass a resolution authorizing the governor to call a constitutional convention to draft a constitution to be submitted to the people for ratification before the Fifty-seventh Congress meets; that the Territorial legislature also authorizes the appointment, by the governor, of seven Democrats and seven Republicans, to be recommended for such appointment by the Republican and Democratic central committees respectively, or otherwise, to attend at Washington, with the governor, as a delegation *representing the people of New Mexico as a unit*, so soon as the Fifty-seventh Congress meets, to advocate, before Congress and its proper committees, the admission of New Mexico into the sisterhood of States. Congress has power, and in view

of the present political status would, I believe, at once approve and accept any suitable constitution that had been adopted by the people of the Territory. The President could then, and would, by proclamation, declare New Mexico to be a State, thus assuring the speedy development of our magnificent resources, and protecting for all time our natural right to the waters of the Rio Grande for the irrigation of our lands.

Statehood is unquestionably essential to New Mexico's material progress, and, if statehood is to be attained, now is the appointed time. It is the imperative duty of every citizen in the Territory to help in the good cause. Too long have they endured political bondage; too long submitted to taxation without representation; too long been denied a voice in the councils of the nation. Let Democratic and Republican leaders lay aside all party jealousies and petty differences, and work for the welfare of our glorious "land of sunshine," without thought of political preferment or personal ambition. Better a State under a Republican administration than a Territory under Democratic control. Better a State under Democratic administration than a Territory under Republican control. Let all unite in striving for full citizenship for the people of New Mexico and our representatives in Congress will soon cease to be Congressional outcasts, voteless political eunuchs, powerless to defend the rights of the people they represent.

NATHAN E. BOYD,
Director-General The Rio Grande Dam and Irrigation Company,
Las Cruces, N. Mex.

CHARACTERISTICS OF THE RIO GRANDE.

[From The Century Magazine, January, 1901.]

RUNNING THE CANYONS OF THE RIO GRANDE.

A CHAPTER OF RECENT EXPLORATION, BY ROBERT T. HILL, UNITED STATES GEOLOGICAL SURVEY, IN CHARGE OF THE EXPEDITION.

So far as man's conception of time is concerned, the American desert is, always has been, and always will be. Its vast oval area of sterile plain, relieved here and there by mountain ranges, extends between higher bordering crests—those of the Rocky Mountains on the east and the Pacific Sierras on the west—from British Columbia to the end of the southern plateau of Mexico. Of the feeble streams which originate within the great desert only three cross the barrier sierras and ultimately reach the sea. These three are the Columbia of the north, the Colorado of the southwest, and the Rio Grande of the southeast.

The wonders of the Colorado of the West were made known to the world through the dangerous trip of Maj. J. W. Powell, in 1869, and are now brought within easy reach of the Pullman-car tourist. The canyons of the Rio Grande are longest and least known; they have been and still are the least accessible to man, and have not hitherto been fully described.

Before describing the passage of the canyons of the Rio Bravo, the middle portion of the Rio Grande, let us glance a moment at the country through which they pass—the matrix, so to speak, out of which the canyons are carved. The widest and lowest part of the great American desert closely follows the international border, and is traversed by the Southern Pacific Railway. The railway on the north and the Rio Grande on the south inclose a vast triangular area known in Texas as the Big Bend Country.

Away from the railway the Big Bend—sometimes called the Bloody Bend—is known as a "hard country;" that is, one in which, through lack of water, civilization finds it difficult to gain a foothold. Although

abundantly supplied with waterworks, such as scarped and canyoned streamways, it possesses a minimum of water. These great arroyos are mocking travesties, which suggest that nature became tired of making this country before turning on the water.

Every other aspect of the Big Bend Country—landscape, configuration, rocks, and vegetation—is weird and strange and of a type unfamiliar to the inhabitants of civilized lands. The surface is a peculiar combination of desert plain and volcanic hills and mountains, the proportions of which are increased by the vast distance which the vision here reaches through the crystalline atmosphere. There is no natural feature that can be described in familiar words.

There are no true forests except upon the tips of the highest peaks, but shrubby plants abound, which are as strange and unfamiliar as the names they bear. Each of these plants is armed with thorns. You are wounded, caught, held, or anchored by this spiteful vegetation at every step away from the beaten trails first made, long centuries ago, by the Mescalero Apaches and the Lipans. One is also roasted unmercifully by day by 130° of sunshine, and cooled almost to the freezing point at night. These great extremes of temperature shatter even the very rocks into fragments.

Around the southern side of the Big Bend Country flows the Rio Bravo, separating this hard portion of Texas from a similar and still harder portion of Mexico. Between the two Republics the river serves as a permanent frontier which is virtually impassable. Few Americans realize the impregnability and isolation of this frontier, or that it represents a portion of our national boundaries which heretofore has never been completely traversed or explored.

When the expedition was first announced many witty remarks were made concerning it. The idea was ridiculed that there were either mountains or canyons in this region, and one facetious correspondent said that he had lived upon the Rio Grande for twenty years, and added that, owing to the absence of water in its sandy bed, the only way the river could be explored was in a buggy. As I drew near the region, more serious obstacles were suggested. As we reached San Antonio the already familiar story that the trip could not be made for want of water began to be supplemented by other dangers. At the Pecos we first heard from old frontiersmen, what proved to be the truth, that too much water was to be dreaded rather than too little, which, coming in sudden floods, would be likely to dash to pieces any craft that entered the stream. At Alpine and Marfa, the only two villages of consequence in the desert stretch of 300 miles between the Pecos and El Paso, graver warnings were received. One man who had spent considerable time upon the river stated that huge obstacles had fallen into the canyons, which made them utterly impassable; others warned us that smallpox was ravaging Presidio del Norte, our proposed point of embarkation, and that in the semiopen country along a portion of the river below Presidio there were murderers, thieves, and bandits, who would destroy any one invading their domain by shooting volleys at night into sleeping camps. These stories of danger, apparently from authentic sources, grew in magnitude as we neared our destination, so that when we finally reached the river two men who had engaged to go upon the expedition backed out from sheer fright.

Many obstacles had to be overcome in order to undertake the journey. Lumber for the boats, purchased at San Antonio, was shipped 150 miles



BLACK ROCK CANYON.



THE SENTINEL OF THE GRAND CANYON.

by rail to Del Rio, where it was made into three strong, flat-bottomed rowboats, each 13 feet long and 3 feet wide, their bottoms protected with longitudinal cleats to provide against the constant scraping over rocks. The finished boats were sent nearly 200 miles by rail to Marfa, where they were placed upon hay wagons and hauled overland 75 miles due south across the desert to the river at Presidio del Norte.

For the trip a crew of men who could shoot as well as row a boat had to be provided. By great good fortune we secured the services of James MacMahon, an old-time trapper, and of Henry Ware, both of whom were frontiersmen of great strength, inured to hardships, skilled with oar and gun, and capable of unlimited endurance. These, with my nephew, Prentice Hill, a lad of 19, who was in for any venture, an extra boatman, a Mexican cook, and the writer, made a party of six, two men to a boat.

At Marfa, tents and other camp luxuries were packed and shipped back to Marathon. We carried only photographic and surveying apparatus, guns, ammunition, and supplies. No personal baggage was permitted except such as one could roll in his bedding. Tents may seem superfluous in the arid region, but, strange to say, it rained for five nights in succession after we disposed of them. These rains proved a blessing, for they caused a sufficient rise in the river to save us an incalculable amount of drudgery in dragging boats over the shoals.

As far as Shafter our road to Presidio was over grass-covered but waterless plains of not unpleasing aspect. Beyond Shafter the road suddenly descends from the upland grassy plains to one of the horrible ocotillo deserts characteristic of the outer basins of this portion of the Rio Grande Valley. These basins are old alluvial plains, covered with gravel and yellow adobe soils, extending far away from the river in successive terraces and reaching 500 feet above it. They are covered by a spiteful, repulsive vegetation, the chief feature of which is the ocotillo, a plant with small green leaves on long and slender stalks that reach above a substructure of lechuguilla, cactus, sotol, and other thorny plants, like serpents rising from a Hindu juggler's carpet. In this belt lies Presidio del Norte, a village with a few miserable adobe houses, opposite the older and larger Mexican town of Ojinaga.

Just above Presidio the Rio Conchos enters the Rio Grande from Chihuahua. This is a long stream, and brings the first permanent water to the main river. In fact, the Conchos is the mother stream of the Rio Grande. Above the mouth of the Conchos the Rio Grande was a dry sand bed. Below, it was a good stream 100 feet wide, with a strong current, which was to carry us along at a rate of 3 miles an hour. At this season of the year the Conchos is flooded by the summer rains that come from the Pacific. Our plans were based upon the assistance of one of these rises, and we were not disappointed. Two days after our arrival at Presidio the river rose a foot, giving exactly the desired stage of water.

At noon, October 5, 1899, we pushed out into the river at Presidio, and started on our long journey into the unknown. I do not claim to be the only man who has traveled the tortuous and dangerous channel of the frontier stream; for one man, and one only, James MacMahon, has made at least three trips down the river. Mine, however, was the first exploring expedition to pass the entire length of the canyons, and, with the exception of MacMahon's, was the only attempt that succeeded.

Others, like Gano and Neville, have passed the fearful 12 miles of the Grand Canyon de Santa Helena. The only Government expedition, the International Boundary Survey, pronounced the canyons impassable, and gave up the attempt to survey them, except the lower hundred miles of the course, which Lieutenant Micheler passed through.¹

MacMahon was interested neither in science, exploration, nor travel. He ventured the stream without knowledge of its dangers, and merely because, as a lifelong hunter and trapper, he knew that the beaver probably lived along its unmolested banks. These animals alone interested him, and a map made by him, if he could make such a thing, would note only beaver banks and danger spots, for these were all that he saw. Unguided and alone, he loaded his boat with traps, placed it in the stream, and slowly drifted down to Del Rio, braving a thousand dangers and making the first successful passage. This man, whose name has perhaps never before appeared in print, had spent his long life in such exploits, and is one of the few old-time trappers still to be found in the West.

The finding of MacMahon was the first of the dozen fortuitous circumstances which made my trip possible, and there was not a day that his knowledge of the dangers of the stream did not save us from loss and destruction. Always kind and unobtrusive, he was as cautious as a cat, being at times apparently overcareful. He was ever on the lookout for a safe channel in the treacherous current, beaver slides on the banks, and border Mexicans in the bushes.

Hardly had we begun to enjoy the pleasant sensation of drifting down the stream when a roaring noise was heard ahead. This came from seething and dangerous torrents of water foaming over huge rounded boulders of volcanic rock which everywhere form the bottom of the river. Reaching these rapids, we had to get out of the boats and wade beside them, pushing them off or over the stones, or holding them back by the stern lines. This process had to be repeated many times a day for the entire distance, and, as a consequence, all hands were constantly wet. The swift current and uncertain footing of the hidden rocks made these rapids very dangerous. A loss of balance or a fall meant almost certain death. It was our very good fortune not to upset a boat or lose a man. Ware was especially cautious at such places, for only a year before, while upon a hunting and fishing expedition on the Lower Rio Grande, his companion had been drowned in a place of this character.

The first 20 miles lay through a low, broken desert country. The river banks were of muddy silt, with here and there a lone cottonwood or willow. Ahead of us loomed the Bofecillos Mountains of Texas and the San Carlos Sierra of Mexico, closing in upon the river.

This region is infested by thieves and murderers, and MacMahon was watchful. Our loaded rifles lay beside our oars, and every bush and stone was closely scanned for men in ambush. The special objects of terror were a famous Mexican, Alvarado, and his associates. Alvarado possessed a mustache one side of which was white and the other black. From this he was called "Old White Lip." To his hand had been charged the murder of several men who had attempted the river route, and it was he who, MacMahon avowed, the year before had riddled

¹ See "Report of the United States and Mexican Boundary Survey," by William H. Emory, Vol. I. (Washington, 1857).



VIEW OF THE GRAND CANYON DE SANTA HELENA, FROM THE BEACH NEAR THE MOUTH.



EAST SCARP OF THE PLATEAU AND OUTLET OF THE GRAND CANYON DE SANTA HELENA.



CROSSING THE ROCKS IN THE GRAND CANYON DE SANTA HELENA.

his sleeping camp with rifle balls. At night we secreted our camps in thickets of carrizo, a kind of cane which grew on the low sand banks, and each man slept with a loaded Winchester beneath his pillow.

The second morning we reached the appropriately named village of Polvo ("dust"), the last settlement for 150 miles. It consists of half a dozen dreary adobe houses on a mud bank, the remains of the old United States military post of Fort Leaton. Here the hospitable storekeeper, an agreeable white man who for some unknown reason had chosen this dreary place of exile, entertained us by showing us the splotches of blood upon the floor and wall behind his counter, where his predecessor had been robbed and murdered the year before, supposedly by Alvarado and his friends. Before I saw this gruesome sight I had not entertained sufficient respect for MacMahon's precautions. Thereafter I was more careful to keep my firearms handy. While at this store, remarks were made by some of my men which led me to suspect that they were secretly planning to retaliate upon Alvarado. Here was a possible motive for undertaking a journey the dangers of which they depicted in vigorous terms. In vain I protested that this expedition was for scientific purposes, and not for vengeance. They only replied that they would shoot Alvarado on sight "like any other varmint."

A few miles below Polvo the huge chocolate-colored cliffs and domes of the Bofecillos Mountains began to overhang the river, and before night we entered the first of the series of canyons of the Rio Grande, in which we were to be entombed for the succeeding weeks. This bears the cheerful name of Murderers Canyon, for here, a year or two before, the body of a supposed victim of Alvarado was found lodged on a sand bar. This and the Fresno Canyon, a few miles below, are vertical cuts about 600 feet deep through massive walls of red volcanic rock. All the other canyons are of massive limestone. The rocks are serrated into vertical columns of jointed structure, and when touched by the sunlight become a golden yellow. The sky line is a ragged crest, with many little side canyons nicking the profile. When evening came we were glad to camp on a narrow bank of sandy silt between the river and its walls. Lying upon our backs and relieved of the concentration of our wits upon the cares of navigation, we were able to study and appreciate the beauties of this wild gorge.

The river itself, here as everywhere, is a muddy, yellow stream. In places, patches of fine white silt form bordering sand bars; about 25 feet above these there is a second bench, covered by a growth of dark-green mesquite. The whole is inclosed by vertically steep, jointed rock walls. The thread of water and the green ribbon of the mesquite bench are refreshing sights, for immediately above the latter, on both sides, the desert vegetation always sets in.

Toward sunset I scaled a break in the canyon to reach the upland and obtain a lookout. Above the narrow alluvial bench forming the green ribbon of river verdure I suddenly came upon the stony, soilless hills forming the matrix out of which the valley is cut, glaring in the brilliant sunshine and covered with the mocking desert flora. The sight of this aridity almost within reach of the torrent of life-giving waters below, the blessing of which it was never to receive, was shocking and repulsive. It also recalled a danger which ever after haunted us. Should we lose our boats and escape the canyons, what

chance for life should we have in crossing these merciless, waterless wastes of thorn for a hundred miles or more to food and succor?

Below the mouth of Murderers Canyon the rapids were unusually bad and dangerous, and it required all hands but one, who stood guard with cocked rifle, to wade beside the boats and preserve them from destruction. As this canyon suddenly ends, its vertical walls continue north and south, as the front of the mountain which it has crossed. We then entered a valley which presents a beautiful panorama of desert form and color. The hills are of all sizes and shapes. Those on the outer border are dazzlingly white, chalky rocks, surmounted here and there by black caps of volcanic rock. The slopes are vermilion foothills of red clay. Still lower are the river terraces of the desert yellow clay and gravel, the whole threaded by the narrow fringe of fresh green along the river.

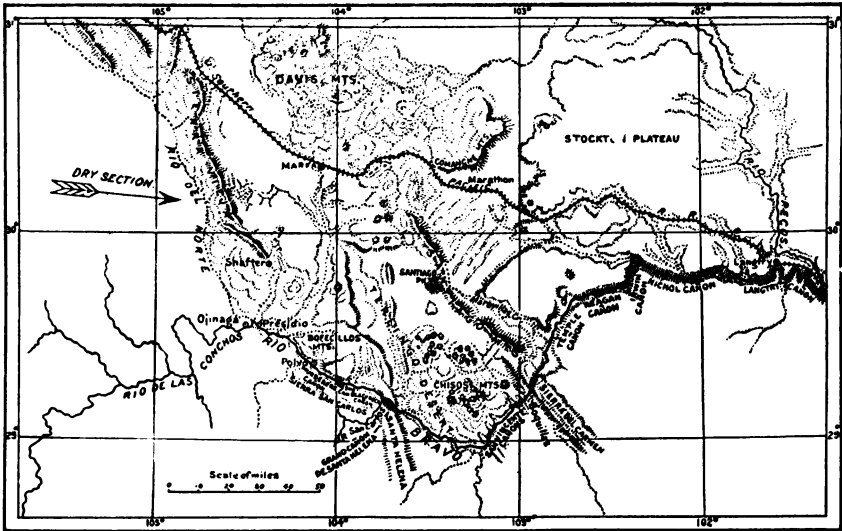
In this wild country lived the notorious Alvarado. Only a most fortunate mistake prevented my men from carrying out their threat to exterminate this bandit. Alvarado had a surname as well as a Christian name, and when they were told that the next ranch down the river was Ordonez's, they did not understand that this was another name for Alvarado until after we had passed him with an infant in his arms, serenely watching us float down the stream. I breathed easier on finding this out, but the men swore audibly and long at their misfortune in not recognizing the supposed monster.

Still lower down the river this region becomes more weird. Immediately adjacent to the stream there are great bluffs of a dirty yellow volcanic tufa, which weather into many fantastic, curvilinear forms. One of these, 200 feet high, stands out conspicuously from its surroundings, an almost perfect reproduction of the Egyptian Sphinx. This, with the sterility of the surroundings and the dirty mud colors, constantly recalled the character of the Nile.

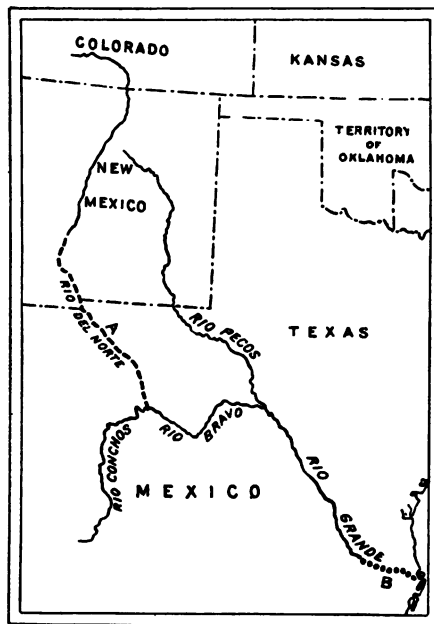
We were relieved to see before us the entrance of another vertical "shut-out," or canyon, into which we passed at about 4 o'clock in the afternoon, and found a suitable camping ground, hemmed in on each side by vertical walls and out of rifle range from above. This canyon was only a mile or two long, and was very similar to Murderers Canyon in its scenic and geologic features.

The next day the river followed a sinuous course through a most picturesque district, which we named the Black Rock Canyon. This was a widely sloping, terraced canyon cut 1,000 feet below the summit of a level plateau. The edges of this plateau were lozenged by erosion into symmetrical buttes with great flat caps and scarp lines above terraced slopes, the graceful curves of which wound back and forth from the river's edge. The tabled tops and lower slopes of these buttes were thick strata of dazzling white chalk, while between them was an immense bed of black lava, which always occupied the same relative position between the white bands, as if kind nature had painted a stripe of black about the hills to break the monotony of the desert glare. All day we wound through these hills, now beneath vast bluffs at the water's edge, and then again in more open places, each revealing a new and more beautiful vista.

Toward evening a graceful sweep of the river brought us into a more open basin opposite the mouth of the San Carlos Creek. This stream, which can barely be said to flow, comes in from the Mexican side, and is the only flowing tributary of the Rio Grande that we



REGION OF THE RIO GRANDE CANYONS.



THE RIO GRANDE WATERSHED.

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passed between the Conchos and the Pecos. Near its head waters, in the wild and rugged San Carlos Mountains, is a little settlement of Indians, the remnant of a once famous, desperate tribe, from which the creek and the mountains take their names. Opposite is a wide, sloping plain of limestone, from the center of which rises a wonderful symmetrical butte a thousand feet high, the summit of which is a head presenting the profile of an old man, which we named the Sentinel, from the watch which it kept over the entrance of the Grand Canyon.

We traveled fully 100 miles to this point by river, but as the crow flies it is only about 50 miles below Presidio. We camped upon the Texas side, beneath a limestone bluff. A mile below us down the river was a vast mountain wall, the vertical escarpment of which ran directly north and south across the path of the river, and through which the latter cuts its way. The river disappears in a narrow vertical slit in the face of the escarpment. This mountain is the Sierra Santa Helena, and the rift in its face is the entrance to the so-called Grand Canyon of the Rio Grande. Why this particular canyon is called "grand" is not known, for many of the canyons below were not only as deep, but far longer and in every way equally deserving of the name. But Texas is poor in topographic names; most of the features are without names at all. This was the case even with the great mountain through which this canyon passed. Later the Mexicans told us that the feature was called the Sierra de Santa Helena, and this particular canyon will be spoken of as the Grand Canyon de Santa Helena.

The Sierra de Santa Helena is an elongated, quadrangular mountain block half a mile high, 12 miles wide, and 50 miles long, and lies directly across the path of the river. Its summit is a plane surface, slightly tilted to the west. The edges are precipitous scarps. Imagine this block cut through vertically with the finest saw, and the rift of the saw will represent the canyon of the river.

Before entering the canyon, let us look at it as did Dr. G. G. Parry, of the Mexican boundary survey, who, deeming it impassable, climbed the heights and saw it from above. The general surface of the plateau presents no indication of a river course, and you are not aware of its presence till you stand suddenly on its abrupt brink. Even here the running water is not always visible, unless advantage be taken of the projecting points that form angles along the general course of the river. From this dizzy height the stream below looks like a mere thread, passing in whirling eddies or foaming over broken rapids; and a stone hurled from above into this chasm passes completely out of sight behind the overhanging ledges. From the point formed by its last projecting ledges the view is grand beyond all conception. You can here trace backward the line of the immense chasm which marks the course of the river till it emerges from its stupendous outlet.

The next morning, after the customary involuntary wetting at the rapids, by which we made our nightly camps, we rowed straight for the narrow slit in the mountain. The river makes a sudden bend as it enters the canyon, and almost in the twinkling of an eye we passed out of the desert glare into the dark and silent depths of its gigantic walls, which rise vertically from the water's edge to a narrow ribbon of sky above. Confined in a narrow channel less than 25 feet wide, without bench or bank upon which to land, our boats glided along without need of oars, as we sat in admiration of the superb precipices which hemmed us in on each side. The solemnity of the scene was

increased by the deathlike stillness which prevailed and by the thought of those who had tried the journey and either lost their lives or narrowly escaped destruction. The walls rose straight toward the sky, unbroken by bench or terrace, and marked only by an occasional line of stratification in the cream-colored marbles and limestones which composed them. The waters flowed noiselessly and swiftly through this canyon, with hardly a ripple or gurgle except at one place. Their flow is so silent as to be appalling. With the ends of our oars we could almost touch either wall. The solemnity and beauty of the spectacle were overwhelming.

We had gone only a few miles when a halt was suddenly forced upon us. Directly ahead was a place where one side of the great cliffs had caved away, and the débris spread across the narrow passage of the river. This obstacle was composed of great blocks of stone and talus rising 200 feet high, which, while obstructing the channel, did not dam the waters, but gave them way through the interstices of the rocks. The bowlders were mostly quadrangular masses of limestone 50 feet or more in height, dumped in a heterogeneous pile, like a load of bricks from a tipcart, directly across the stream. At this place, which we appropriately named "Camp Misery," trouble began. Although the obstruction was hardly a quarter of a mile in length, it took us three days to get our boats across it.

A landing was made upon the rocks, and scouts were sent out to explore a route across them. In the course of three or four hours we found that it would be necessary to pack the contents of the three boats over these stones, first uphill to an altitude of 180 feet, and then down again to the stream below the obstruction. Crevices were found between the bowlders where a foothold could be obtained, and the articles were passed hand over hand to a height of 100 feet. Our faithful Mexican, with ax in hand, then cut away the thorns and daggers, and made a path along the base of the cliff for the remainder of the way. It was not until the following night that the last piece of baggage was transferred.

The handling of the equipment was an easy task in comparison with a greater difficulty that lay before us. The three boats, each weighing 300 pounds, were yet to be lifted over the vast cubes of limestone along the immediate course of the river, around and between which the water dashed with the force of a mill race, and where a slip of the foot on the smooth rocks meant certain death.

Foothold had to be sought on these great stones, and often precious hours were lost in seeking a means to ascend them. This was sometimes accomplished by throwing lariats, the dangling ends of which were scaled hand over hand. Once upon the summit of the rocks, the boats were pulled and pushed up by the exertion of all the crew. Three days were consumed in this task before we passed our final night at Camp Misery, ready to resume our journey the following morning. At the place where we ate and slept there was not a foot of flat earth to lie upon, and we sought such perches as we could obtain upon the sharp-cut edges of the fallen limestone blocks, above danger of flood. For myself, by a liberal use of the geological hammer I widened out a crevice in the stone, in which, by lying crooked, I managed to pass the nights.

During our three days' stay at Camp Misery we had abundant opportunity to observe the majestic features of the great gorge in which we

were entombed. The scene within this canyon is of unusual beauty. The austerity of the cliffs is softened by colors which camera or pen can not reproduce. These rich tints are like the yellow marbles of Portugal and Algiers, warmed by reddening tones which become golden in the sunlight. The cliffs are often rigid and geometrically vertical, but usually the severity is modulated by gently swelling curves which develop at the edges of the horizontal strata or vertical joint seams. In many instances the profiles are overhanging or toppling. This was forcibly illustrated on one occasion when, having selected a spot upon which to make my bed, my attention was directed by the men to an immense boulder so delicately poised upon the very edge of the cliff immediately above me that the vibration of a rifle-shot would apparently have dislocated it and sent it thundering down.

Here and there the surging waters at the angle of a bend, beating straight against the limestone, have bored great caves beneath the bluffs at the water's edge. In places gigantic columns 500 feet high have been undermined and dropped down a few feet without tumbling, so that they now lean in uncertain stability against the main wall.

From above, the sky line was of never-ceasing interest, whether bathed in sunshine while shadows filled the vast crevices below or flooded with the glorious moonlight, which is one of the characteristics of the desert. Frequently there were vast caverns 100 feet or more below the crest line, into which we could look from below and see their other ends opening out upon the plain above. Castellated and turreted forms in natural mimicry of the feudal structures of the Rhine were frequent. One of these, opposite our camp, was so natural that upon awakening one moonlight night and seeing it above me it took several moments for me to dispel the idea that it was a genuine castle, with towers, bastions, portcullis, and portholes.

A striking feature of this canyon was the absence of animal life. There was little sign of bird, rabbit, wolf, squirrel, or other animal so common upon the uplands above. The only indigenous creature we saw was a small species of bat, new and unknown to me, which fluttered about at night. A single covey of blue quail, which in some manner had made their way into these depths, were so frightened by our intrusion that it was pitiful to see their vain attempts to fly out to the cliffs above. Time and again the mother bird called her flock together and led an attempted flight to the summit. The quail is not noted as a soarer, the trajectory of its flight being almost as flat as that of a rifle ball. They rose 200 or 300 feet, with a desperate whirring of their wings, and then fell back almost exhausted into the rocky débris of the canyon.

While buried in this canyon at Camp Misery we were constantly impressed by the impossibility of escaping from it in case we should lose our boats or be overwhelmed by sudden floods. Leisure moments were devoted to looking for some possible manner by which the vertical walls could be scaled. For its entire length there is no place where this cliff can be climbed by man. In order to reach its summit, after finishing my river trip, I made a special overland journey from Marathon, and succeeded in surmounting its north end, some 10 miles from the river, and in making a photographic view of the canyon from above.

Having finally succeeded in crossing the obstruction early one morning, we transported our baggage to the boats preparatory to leaving.

Before the boats were loaded a tremendous roaring sound like distant thunder was heard up the canyon, and we saw that what we most dreaded was happening—the river was rising. A big flood of the ordinary kind would have veneered the dangerous rocks with water and our prospects for escape would have been small. We hastily piled our baggage into the boats and sprang aboard. It was either stay and starve or go and chance it. Fortunately this particular rise proved to be a small one, just sufficient to give the desired impetus to our craft, and our course through the canyon was rapid. The walls increased in altitude as we descended the stream, and just as they reached their greatest height, some 1,750 feet, our boats suddenly emerged into the sunlit desert.

Looking back, the beautiful outlines of the east cliff of the plateau of Santa Helena, from which we had emerged, were seen. We lingered long in contemplation of this most remarkable feature. It is an abrupt escarpment of massive limestone, which rises in a vertical wall to a height of 1,750 feet and extends northwest and southeast for 60 miles, 50 miles in Mexico and 10 miles in Texas. Its sky line is as square cut and horizontal as the top of a table. The face of the cliff appears absolutely vertical, although it is marked by one slight bench. Nicking the summit here and there at wide intervals are deep V-shaped rifts of minor waterless canyons whose mouths are suspended in the air. As bold and extensive as is this mountain, it has hitherto found no place or name on published maps. For a week after passing out of the canyon this great escarpment could be seen behind us.

This majestic wall of rock forming the eastern escarpment of the Santa Helena owes its contour to the geologic process known as faulting. Along a great fracture developed parallel to its face the rocks have dropped down over 5,000 feet. Some 40 miles to the east there is another scarp line parallel to that of the Sierra del Carmen. This faces in the opposite direction, or toward the west, so that these gigantic cliffs oppose each other. Between these two walls of rock the strata once met in an arch, making the great crest of the regional mountain uplift. The intervening region or lower country represents a downfallen wedge. Such a country constitutes a rift valley, just as if a longitudinal slice were made in the crust of a watermelon and then pushed in until its area was below that of the remaining surface. In this case it was the arch of the Rocky Mountains which had dropped down, constituting a peculiar belt of country, into which we suddenly emerged as we left the canyon, and which may be called the Terlingo Desert. Although this desert is only 40 miles wide, the river pursues a circuitous course through it of fully 100 miles. For days we followed vast bends or oxbows, until we had made the great south bend of the river.

The Terlingo Desert is one of the most bizarre pieces of landscape that can be imagined. Though called a plain, this is only out of courtesy to its more mountainous perimeter. Its surface is covered by nearly every form of relief within the topographic category, including stretches of level plain, vast terraces, deep arroyos, lava-capped hills, necks and dikes of old volcanoes, huge mesas, summits, and small mountain ranges, collectively forming one of the hottest and most sterile regions conceivable.

The crowning feature of this desert is the lofty and peculiar group of peaks known as Los Chisos ("the ghosts"). These weird forms

are appropriately named. They are ragged points of a reddish granitic rock, weathering into yellow and orange colors, like those from which the Yellowstone derives its name. They rise almost straight into the air to a total altitude of 9,000 feet, or 6,500 feet above the river. The vertical slopes of the peaks, rifted here and there by joints and seams, give to them the aspect of being clad in filmy drapery. Wherever one climbs out of the low stream groove these peaks stare him in the face like a group of white-clad spirits rising from a base of misty gray shadow and vegetation. Many are the weird forms and outlines which the peaks assume. Two specially conspicuous rocks are known as "Mule Ears," and, seen from a distance of 20 miles or more, are remarkably suggestive of the objects for which they are named. They are separated from the main summits by a valley which, from its inaccessibility, the cowboys have named "Cow Heaven." Surrounding these peaks on all sides is an area of lower hills and old terraces covered with desert gravel and vegetation, some of which are black capped volcanic hills; others are of dazzling yellow sandstone; still others show stripes of stratified vermilion and chocolate colors.

Day after day we drifted through this weird desert, hemmed in by low bluffs of dirty yellow soil and seeing few signs of human habitation. One day we ran across three or four Mexicans leisurely driving a herd of stolen cattle across the river into Mexico. This is the chief occupation of the few people who choose this wild region for a habitation. A little later we were greeted at our camp on the Mexican side by a white man, accompanied by seven or eight Mexicans, all fully armed. Ware recognized him as a notorious ex-convict, known in Texas as "Greasy Bill." Later, upon my return to Marathon, I learned from the rangers that he was the outlaw most wanted in Texas, and that only the year before he had murdered an old man named Reed, who kept a store on the Texas side.

We were now nearing the apex of the Great Bend. The river had never been correctly meandered, and we naturally looked for the point where the stream which we had followed so many miles in a south-westerly direction should turn toward the north. Five times we came to the southern apex of bends in the stream, each time thinking we had made the turn, before we finally reached the most southern point in our journey. Our general course then changed from a southwest to a northwest direction, which we were to follow for many days.

Just after making the turn we entered the first of the two canyons known as the Little and the Big San Vincente canyons, respectively. These cut through a long, low sierra within the general area of the Terlingo Valley. Directly through and across the front of the sierra a vertical black line could be seen marking the vast chasm through which the stream makes its way. As we neared the entrance the river presented the appearance of apparently plunging into a seething hole without visible outlet. This canyon, like the Grand Canyon de Santa Helena, is cut through limestone, but the strata are tilted and bent into many picturesque effects. The bends of the stream in its depths are more numerous and the walls are broken by the entrance of many lateral canyons, presenting pinnacled and terraced cream-colored sides.

In this canyon we saw a Rocky Mountain sheep far above us upon an inaccessible ledge. Serafino took one shot at him and he tumbled back in a majestic leap.

The passage of the San Vincente canyons took only a few hours

and at noon we found ourselves in the eastern or Tornillo extension of the Terlingo Desert, near the ruins of the old Mexican Presidio de San Vincente. These ruins were seen in 1852 by the Mexican Boundary Survey, and were apparently as ancient and deserted then as to-day. They consist of extensive roofless walls of old adobe buildings, standing in an uninhabited region upon a low mesa a mile or two from the river. The people of the Big Bend region have a tradition that in the days of the Spanish régime they were the site of a prison where convicts were kept and worked in certain mythical mines in the Chisos Mountains. They are the ruins of an old Spanish frontier military post.

The following morning we passed another short canyon through a mountain region similar to that of San Vincente, which was picturesque in every detail. Beyond this we arrived at the village of Boquillas, where we encountered the first and only American civilization upon our expedition.

At this point, and for about 50 miles down its course, the river is reenforced by a remarkable series of hot springs bursting out of vertical fissures. The first noted of these was in the middle of the stream, and its presence was made apparent by the beautiful limpid water welling up in the midst of the muddy current. Roughly estimated, the volume of the stream is doubled by springs of this character as it passes through these mountain gorges.

Boquillas is a widely divided settlement, that owes its existence to a near-by silver mine in the adjacent mountains of Mexico. Upon the American side there are a store, a custom-house, and a post-office. These are connected with the Mexican side of the river by a great wire cable carrier a quarter of a mile long, terminating in Mexico at a smelter where enterprising Americans are reducing the ore found in a vast pocket 12 miles away in the Sierra del Carmen.

Two miles below the smelting works is a densely crowded village of 2,000 Mexican inhabitants. This, like other Mexican towns along the Rio Grande, presents none of the neatness or artistic suggestion of the villages of other parts of Mexico. There is no sign of stucco, whitewash, or of ornamentation of other kind. Streets and walls and interiors are all a continuation of the dirty adobe soil of which the houses are built, made no less repulsive by the filthy pigs, burros, chickens, and other inhabitants which seem to possess no separate apartments. It is rumored that the ore is becoming exhausted, and that within a few months the industry will cease. Then the inhabitants of the three Boquillas will disperse like the flakes of white cloud that sometimes dot the sky, and the solitude of the desert will again reign the entire length of the Big Bend.

East of the Boquillas group of settlements the wonderful western escarpment of the Sierra del Carmen rises straight above our path. Although the crest, which makes a gentle arch, is less regular than that of the opposing escarpment of the plateau of Santa Helena, it is higher and of grander relief. Surmounting the center of the arch of the plateau is a single steeple-like peak, which may be termed the Boquillas Finger. This landmark, like the Chisos summits, was often in sight from points 100 miles away.

Across the center of the Sierra del Carmen, which rises 7,500 feet above the sea, the river cuts another vertical chasm, which is even more worthy of the name of the Grand Canyon than that of the Sierra

de Santa Helena. The Mexican boundary surveyors, upon encountering it, were obliged to make a detour of 50 miles around the mountain to approach the river again, where they finally gave up the attempt of further exploration and reached the lower Texas country by a long journey through Mexico. The canyon profile presents a summit nearly 5,000 feet above the river. The river itself in approaching this mountain first turns from side to side in short stretches, as if trying to avoid the mighty barrier above it, and then, as if realizing that it is constantly becoming involved in the maze of foothills, suddenly starts across the sierra.

In crossing this mountain the river pursues a tortuous course made of many small rectangular bends, around each of which a new and more surprising panorama is presented. The walls of the canyon are of the same rich cream-colored limestone rocks as those which make the canyons of Santa Helena and San Vincente. Owing to the dislocation of the strata the rocks are more varied in form and are broken into beautiful pointed salients and vertical columns. Wonderful indeed are the remarkable forms of rock sculpture. Among these was a vast cylindrical tower like the imaginary pictures of Babel, standing outward of the cliff line and rising, through perspective, far above. Upon the opposite side was another great Rhine castle. Frequently lonely columns of rock 500 feet or more in height stood out from the front of the cliff in an apparent state of unstable equilibrium. Caverns of gigantic proportions also indented the cliff at many places. Again, the great yellow walls were cut from base to summit by wonderful fissures filled with white calcite or vermilion-colored iron ore. Huge piles of talus here and there encumbered the bases of the cliffs.

The moon was full while we were in this canyon, and the effects of its illuminations were indescribably beautiful. Long before its face could be seen its light would tip the pinnacles and upper strata of the cliffs, still further gilding the natural yellows of the rocks. Slowly this brilliant light sank into the magma of darkness which filled the canyon, gently settling from stratum to stratum as the black shadows fled before it, until finally it reached the silent but rapid waters of the river, which became a belt of silver. Language can not describe the beauty of such nights, and I could never sleep until the glorious light had ferreted out the shadows from every crevice and driven darkness from the canyon.

After several days our boats suddenly drifted out of the shades and beauties of the Carmen Canyon and emerged into the last of the open desert basins. As we did so we suddenly came upon a thousand goats, accompanied by their shepherds and dogs, which were drinking at the water's edge. Startled by the unusual appearance of boats, they quickly fled.

In this small desert, known as Stillwells Valley, which is only 10 or 12 miles across, we again see the remarkable alluvial deposits of the Rio Grande rising in wonderful terraces back to the bases of the mountains. The human mind is almost incapable of conceiving the vast quantity of boulders which in times past have poured out of these vertical canyons into such open plains.

Evidence of animal life, hitherto so rare, now began to appear. A lizard was noted, and two immense ravens, half hopping, half flying, defied us to shoot them. Everywhere along the muddy banks beaver slides were found, and the willows had been cut by them. Three deer

were also seen, while now and then a covey of blue quail scrambled up the stony banks and scattered in the cactus shrub. A mocking bird sang in the thorny bush. Only one who is accustomed to the animal life of the desert can imagine the joy with which we greeted these lowly friends.

Beyond the little Stillwell Desert we entered Temple Canyon. The severity of its walls was frequently broken by ravines, so that at nearly every bend there stood before one a beautifully sculptured mountain, golden in the sunlight, with pinnacled summits and cliffs carved into exquisite panels and grottoes.

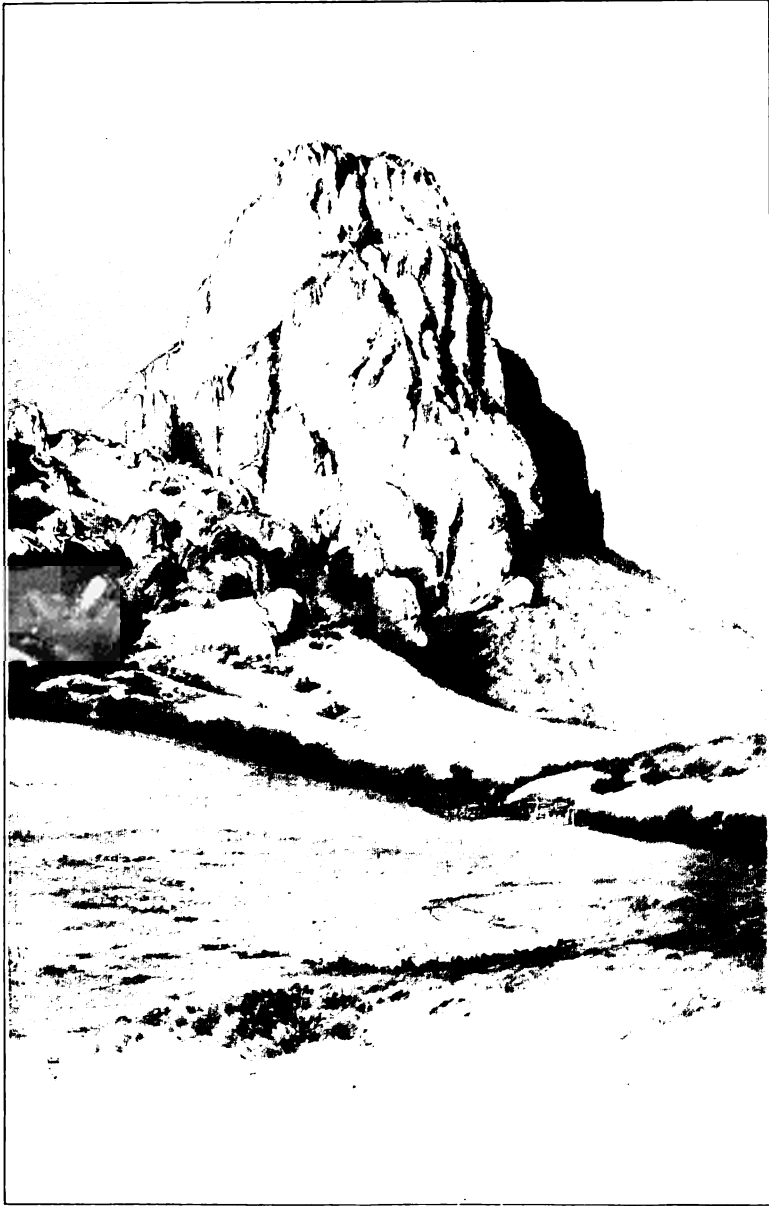
Our journey was just half accomplished, and we had crossed to the eastern side of the Cordilleras and were upon the Atlantic slope. The general direction of the river now bent due north, and although the true mountains of folded structure had ceased, the stream continued to be indented to a depth of 2,000 feet or more in canyons of limestone cut out of the great plateau which flanks the eastern side of the Mexican sierra. This lower course is almost a continuous canyon to Del Rio, and from an esthetic point of view is even more picturesque and beautiful than the portion of the river already described.

Beyond Temple Canyon the cliffs recede, leaving a valley from 1 to 5 miles in width between the distant walls. Through a huge gap in these the mouth of Maravillas Creek has been cut. This is a horrible desert arroyo, leading northward for 100 miles or more to Marathon. It has a channel sufficient for the Hudson, but is utterly void of water. Now and then, in the intervals of years, great floods pour down its stony bottom, giving the bowlders and other desert debris a further push toward the Rio Grande and the sea. Such floods, however, are so unusual and sporadic that I have never found a man who knew this stream to run from source to mouth. No profounder testimonial to the slowness of nature's great geological processes can be found than these vast waterless waterways. The mouth of Maravillas Creek marks the end of the great northerly stretch of the Rio Grande, and from there on the algebraic sum of the direction of the river's course is almost due east to the mouth of the Pecos.

Below the mouth of the Maravillas the river continues in a narrow valley between the now more widely separated cliffs of the canyon, which are great buttes and mesas, the dissected fringe of a high limestone plateau above us. These cliffs are cut into many lobes and buttes. Occasionally one of these stands out and apart from the main cliff line in lonely grandeur. Of this nature is Castle Butte, a notable landmark. This rises fully 1,500 feet above the river. Its circular, flat top, the square-cut escarpment cornice, and the gracefully sloping pediment are beautiful illustrations of the wonderful symmetrical sculpture seen along the river. These wider vistas are only of brief duration. Soon the rocky walls again approach each other, and the stream resumes its crowded channel between vertical walls, presenting only at rare intervals a place where one can land and find a small spot to camp.

We had now been nearly a month on the river, and the necessities of the occasion forced us to push on as fast as possible. In the steep canyons there had always been a tense feeling of anxiety, accompanied by a longing to escape their dangers as soon as possible. This feeling, as well as our limited commissary, ever drove us onward.

Shortly after making the turn to the east, and in the depths of a



NORTH PEAK OF THE LOS CHISOS MOUNTAINS.

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beautifully terraced canyon, we came upon another copious hot spring running out of the bluff upon a low bench, where it made a large, clear pool of water. We reached this place one Sunday noon. The sight of this natural bath of warm water was tempting to tired and dirty men, and here we made our first and only stop for recreation. After lunch most of the party proceeded to the warm pool, and, stripping, we literally soaked for hours in its delightful waters, stopping occasionally to soap and scrub our linen. While here the party indulged in guessing the height of the inclosing cliffs. The air was so clear in this country that one always underestimated the magnitude of the relief. None of our estimates exceeded 500 feet. Seeing a good place for the first time in all our course to scale the canyon walls, I climbed them and measured the exact height, which was 1,650 feet. The view from the summit was superb, revealing the panorama of the uplands, which is completely shut out while traversing the chasm below.

In the eastern course of the river the rock forms and sculpture become more varied, and one is constantly surprised by new types of sculpture and scenery. For miles we passed through a perpendicular canyon, the cliffs of which were serrated by rough and cavernous indentations and great vertical seams, between which the ledges were molded into ragged forms like the Bad Lands of Dakota. Below this, in another canyon, the sculpture is marked by queer, eccentric pinnacles projecting above the ragged sky line—spires, fingers, needles, natural bridges, and every conceivable form of peaked and curved rocks.

About the center of the eastern stretch of the river the altitudes of the canyon walls decrease slowly and almost imperceptibly until the river completely surmounts the great limestone formation which has been the chief matrix of its prison walls. These walls, to their termination, lock in the river securely from approach. In this eastern stretch the immediate gorge of the river is generally a canyon within a canyon. Within a double canyon of this type MacMahon had once been caught by a flood. He endeavored to escape to the uplands in order to make his way to the railway. After three days of attempt he finally reached the summit of the immediate canyon only to find another wall, invisible from the river, which it was utterly impossible to surmount. Fortunately the river had meanwhile subsided and he escaped by resuming his boats.

There is a break in the continuity of the canyon near where the river crosses the one hundred and second meridian. This interruption is only a short one, for the stream soon begins to descend again into a rock-bound trough. In this portion, and as far east as the mouth of Devils River, some of the most beautiful and picturesque effects are found. The walls are no longer of orange color, but are of chalky limestone of purest white, which weathers into great curves rather than vertical ledges. In one canyon, for instance, the walls are carved into the most remarkable perpendicular pillars, resembling columns of the Egyptian type, each of which is over 100 feet in height. Unfortunately the kodak films were exhausted and the glass plates failed to receive the impression of this artistic scene. In other places the river has gradually undermined a channel far beneath a great ledge of overhanging limestone, the summit of which projected as smooth, slanting gables overhanging the stream, under which we sailed for hours.

Beautiful as were these canyons, and prolific as they were in game

and in caves of wild honey, the hardships we had endured were telling upon the temper of the party, and we no longer appreciated the noble surroundings. We longed only to escape from the walls, upon which we now began to look as a prison. Ten hours of hard rowing each day, everyone of which was burdened with the additional labor of dragging the boats over dangerous rapids, constant wetting by wading and ducking, the baking due to a merciless sunshine, the restricted diet, made no better by Serafino's ignorance of hygienic cooking and Shorty's constant additions of bacon grease to every article, together with the ever-present apprehension of danger, had put us all in a condition of quarrelsome, nervous tension, which is a dangerous state in camp, no matter how friendly all may be, and it was with pleasure that we finally sighted a longed-for landmark indicating a point where we could abandon the river.

Opposite the village of Langtry, near the top of a vertical cliff some 300 feet high, is a small bluff cavern. Poised on the edge of this inaccessible cavern is a huge pile of sticks skillfully entwined into what is perhaps the largest birds' nest in America. Since the trans-Pecos country was first known this nest has been a landmark, and until lately was inhabited by a pair of eagles which here annually brought forth their young. A few years since, however, a company of colored soldiers were stationed near this place, and, with the instinct which prompts men to shoot at every living thing, they killed the birds which even the hardened frontiersmen had long protected.

We landed the contents of our boats upon a little beach opposite this nest. A messenger proceeded a mile and a half to the village of Langtry and secured a pack horse, which conveyed our belongings to the railway station. It was gratifying to see once more even the crudest habitation of man. We were received by a famous old frontiersman, whose hospitable house is decorated with a peculiar sign, reading:

Law West of the Pecos.

ROY BRAN,

Justice of the Peace and Notary Public.

San Antonio Lager Beer.

We had hardly reached the railway track when we became aware of the fact that civilization's dangers are sometimes greater than those of nature. A locomotive whistle was heard in the distance, the first time that sound had greeted our ears for over a month. From the fact that this whistling continued fully five minutes we understood that it was a signal of distress, and that a train had become derailed somewhere on the wild and desert prairies. Soon a hand car appeared. An appeal for medical assistance was made, and my party, with its small first-aid-to-the-injured outfit, was conveyed some 5 miles out into the desert, where a huge freight train, pulled by two gigantic locomotives and laden with rich goods for the Orient, had jumped the track and tumbled into a chaotic pile. All night long we attended to the injured and the dead, and it was 3 o'clock the next morning when we dragged our weary steps over the miles of cactus back to the village, threw ourselves upon the railway platform, and for the first time within a month we slept away from the roar of the river and

free from the oppressive fear of danger which had ever haunted us within its confining walls.

We had successfully navigated and mapped 350 miles of a portion of one of America's greatest rivers, which hitherto had been considered impassable; we had made a geologic section directly across the eastern sierra of the great American Cordilleras from the interior deserts to the coastal plain, procuring light upon some of our least-known country; we had escaped dangers which had overwhelmed those who had attempted the canyons before, and our little party dispersed contented with its success.

SUPPLEMENTAL TESTIMONY

BY

GENERAL MILLS.

SUPPLEMENTAL TESTIMONY BY GENERAL MILLS.

DEPARTMENT OF STATE,
INTERNATIONAL (WATER) BOUNDARY COMMISSION,
UNITED STATES AND MEXICO,
Washington, D. C., February 21, 1901.

Hon. J. P. HEATWOLE,
*Chairman of the Subcommittee, House of Representatives,
Foreign Affairs Committee.*

SIR: I return you herewith the report of myself and Mr. Follett on the international dam and reservoir in the Rio Grande, which you loaned to Mr. McGowan, and which he has just now returned to me, for file with the other papers which you have under consideration.

Regarding the question raised by Mr. McGowan, that this report was neither a legislative or executive document, not bearing any imprint to that effect, I beg to call your attention to House Resolution No. 164, Fifty-fourth Congress, first session, submitted by Mr. Hitt, authorizing the printing of 500 copies of the same. I think a great portion of these 500 copies were delivered to the House Committee on Arid Lands, as on several occasions I secured copies from Mr. Cooper, of Texas, then a member of that committee, from his committee room.

Regarding the allegation of Mr. McGowan that the bill makes no reference to this document, but only to Document No. 229, and that no plans and specifications appear in said Document 229, I beg to call your attention to the following words in the report of the joint engineers, on page 44 of said document (No. 229), under the head of "Location of the site of the dam: We understand the dam referred to above to be the dam described in a report made by Col. Anson Mills to the Geological Survey in 1889."

It would appear, therefore, clear enough that the bill has reference to this report of myself and Mr. Follett, and I request that it be printed with the other proceedings of your committee in regard to this bill, as well as resolution No. 164, authorizing the printing of the same, which is pasted on the front of the report.

I have the honor to be, sir, very respectfully, your obedient servant,

ANSON MILLS,
*Brigadier-General, U. S. Army, retired,
Commissioner, having in charge the investigation for the
equitable distribution of the waters of the Rio Grande.*

[H. Res. No. 164, Fifty-fourth Congress, first session.]

Resolved, That there be printed at the earliest day practicable five hundred copies, in separate form, with paper covers, of the report of Major Anson Mills, United States Army, dated October tenth, eight-

een hundred and eighty-nine, to the Director of the Geological Survey, on the subject of his investigations and surveys for an international dam and reservoir on the Rio Grande del Norte, for the purpose of controlling the flood waters of said river and preserving the boundary between the United States and Mexico, with the five appendixes, A, B, C, D, and E, attached thereto, using the same plates for diagrams and maps that were used in the printing of the annuals of the Geological Survey, Eleventh, Part Second, pages fifty-four and fifty-six, and Thirteenth, Part Third, page four hundred and ten.

REPORTS ON THE INVESTIGATIONS AND SURVEY FOR AN INTERNATIONAL DAM AND RESERVOIR ON THE RIO GRANDE DEL NORTE TO PRESERVE THE BOUNDARY BETWEEN THE UNITED STATES AND MEXICO BY CONTROLLING THE FLOOD WATERS OF SAID RIVER, WITH APPENDIXES A, B, C, D, AND E.

[By Anson Mills, Major, Tenth Cavalry, supervising engineer Geological Survey, and W. W. Follett, civil engineer.]

FORT BLISS, TEX., *October 10, 1889.*

SIR: I have the honor to submit herewith a report of my investigations in connection with the United States Geological Survey. My relations with that part of the Government service, which are rather anomalous, came about in the following manner:

While on leave of absence here last fall I submitted to the city council of El Paso a grand project for a dam and reservoir in the Rio Grande above this place. Later on, while in Washington, I presented the same to the Director of the Geological Survey, Major Powell, who gave me such kindly encouragement that on the 10th of December, at the request of the then Secretary of State, Mr. Bayard, I wrote and he had printed a detailed explanation of my project, which is inclosed herewith, marked Appendix A.

In April, at the instance of Major Powell, I received the following order from the War Department:

[Extract.]

SPECIAL ORDERS, }

No. 85. }

HEADQUARTERS OF THE ARMY,
ADJUTANT-GENERAL'S OFFICE,
Washington, April 12, 1889.

* * * * *

6. With the approval of the Secretary of War, Maj. Anson Mills, Tenth Cavalry, will report for temporary duty to the commanding officer, Fort Bliss, Tex. In addition to his military duties at that post he is authorized to extend his services in every proper way when they may be requested to the officers of the Interior Department in charge of the Geological Survey on that part of the Rio Grande 60 miles north and 60 miles south of El Paso, Tex., this survey having for its object the redemption of areas of irrigable lands in the Rio Grande Valley. The travel enjoined is necessary for the public service.

* * * * *

By command of Major-General Schofield:

Official.

R. C. DRUM, *Adjutant-General.*

J. C. KELTON,
Assistant Adjutant-General.

Major MILLS, *Worcester, Mass.*

On reporting to the Director of the Geological Survey I received verbal instructions from him to make all reasonable investigations that would tend to develop the feasibility of my project and the following written instructions:

DEPARTMENT OF THE INTERIOR,
UNITED STATES GEOLOGICAL SURVEY,
Washington, D. C., April 19, 1889.

SIR: I have the honor to acknowledge the receipt of your letter of 15th instant, transmitting a copy of Special Orders, No. 85, current series, from the commanding general of the Army, authorizing you to extend your services in every proper way when they may be requested by the officers of the Interior Department in charge of the Geological Survey and its action with reference to improvements of the Rio Grande River near El Paso.

In reply thereto I hereby request that you will act as the advisory agent of this bureau in respect to matters connected with improvements of the Rio Grande River, near El Paso, and relation to the use of its waters for purposes of irrigation. You are requested to keep this bureau informed of all projects looking to such purposes, and to communicate to it your opinions and advise thereon. In view of the fact that any works affecting the flow of the Rio Grande River must be matters of equal solicitude to the people of the United States and of Mexico and to their respective Governments, you are especially requested to acquaint yourself, so far as may be, with the views of the Mexican officials and people in relation to such matters, maintaining in your intercourse with them a most friendly attitude, and representing to them a sincere and earnest desire of this office to treat all matters relating to the use of the waters of the Rio Grande for purposes of irrigation with a due regard for their rights.

It is the purpose of this bureau to establish at El Paso a station for gauging the annual flow of the river, for measuring the evaporation, and for other purposes, and I should be pleased if you would exercise a supervision over this work of the employees, who will be instructed to report to you, and I further request that you will assist them in securing facilities for their work.

Very respectfully, sir,

J. W. POWELL, *Director.*

Maj. ANSON MILLS,
Tenth Cavalry, U. S. A., Worcester, Mass.

I arrived here May 4, and in company with the Mexican consul, Mr. Escobar, crossed the river and presented these instructions to Mr. Garfias, Federal engineer; Colonel Candano, jefe politico of the Canton del Bravo, and other local officials, to whom I explained in detail the projected enterprise, which they one and all received in the most encouraging manner, giving me permission to establish one end of my cable for the gauging station on Mexican soil and proffering to assist me in any reasonable manner. I then invited Mr. Garfias, the engineer, to cooperate with me to any extent he might see proper by accompanying me in my investigations, surveys, and measurements, to the end that his Government might have official knowledge of all preliminary work in the matter from the beginning. After receiving the necessary authority from the minister of public works in the City of Mexico, he has kept himself advised concerning all our investigations to this date, and I purpose furnishing him with a copy of all maps and reports relating thereto, with a view to inducing the Mexican Congress (now in session) before their adjournment in January, to pass a joint resolution authorizing their President to join the United States in the construction of the dam proper, and appropriating \$150,000 for that purpose should our Government make a like appropriation; this for the purpose of gaining a year's time in the commencement of the work.

MEASUREMENT OF EVAPORATION.

May 6 Messrs. Williams and Dyar reported to me. Measurements for evaporation began May 10 and were continued until the present date with the following results:

	Inches.
May (twenty-one days, 11th to 31st).....	7.31
June	11.23
July	9.05
August	10.85
September.....	8.20
Total.....	46.64

A total of 46.64 inches for one hundred and forty-three days, or a mean of 0.32 of an inch per day. As these one hundred and forty-three days embraced the season of greatest aridity, it is probable that the annual evaporation will be about 6 feet.¹

MEASUREMENT OF FLOW.

May 20 our gauging station was established, the first measurement taken that day showing 4,300 cubic feet per second; the last, taken July 30, showing 30 cubic feet. On August 5 the river ceased to flow, and has not carried any water to this date, though some small pools of water are still to be found in the pass, sufficient to float the evaporation pans. During the measurements of flow the fall of the river was very continuous and gradual and other conditions favorable to the projection of curve for the measurement of highest flood as shown by drift marks, but, unfortunately, about the middle of our observations the crest of the Mexican dam, only 300 yards below the station, was raised about 12 inches, distorting the projection of the curve so that no reliance could be placed upon it. The river probably carries about 9,000 cubic feet at highest flood, and perhaps an annual average of about 1,200 cubic feet per second.

MEASUREMENT OF SILT.

Between June 10 and July 28, 118 samples of water were taken from different parts of the river's current and the sediment of each carefully measured, with the following result: The average of the per cent of the volume of water carried, according to the assumption that a cubic foot of dry sediment weighs 85 pounds, is 0.345 of 1 per cent. The results varied from one-fourth to one-half of 1 per cent of the water carried, save in one case of local rain, the flood of which lasted some twelve hours, wherein the per cent rose to $1\frac{1}{2}$.

Assuming this to be correct, and that it will take one year's time for the river to fill the lake with water, it will take about three hundred years for the lake to fill with sediment. This, however, is making no allowance for evaporation, which is very great (possibly on the surface of the lake one-fourth the annual flow), or for the moving quicksand in the river's bottom, or the detritus to be thrown into the lake by storms from the gulches and ravines from its mountainous sides.

It is, however, safe to assume that at least one hundred and fifty years must elapse before its basin can be filled with solid matter. If

¹ For subsequent investigations on this subject see page 411, Thirteenth Annual Report Geological Survey, Part III.

these premises be correct, it should be remembered that each year one one hundred and fiftieth part of the lake's basin will be filled with solid matter, thus decreasing, year by year, its storage capacity in that proportion; but the date when any or all of these causes may destroy its efficiency is so remote as to be unworthy of consideration. This silt problem seemed to be the most formidable one confronting the enterprise. After it had been favorably determined you visited the locality, inspected the proposed sites for dam, the basin for the lake, and the location of the two railroads, from an engineer's standpoint, and decided to have preliminary surveys, plans, and estimates for the entire work made as quickly as possible, in order that the project might be presented to Congress at its coming session.¹

Mr. W. W. Follett, the engineer employed by you for that purpose, arrived here July 8 and immediately began his work, which was completed September 18. His report, marked B, maps, plans, notebooks, etc., are forwarded herewith. Not being a practical engineer, I make no comments on its technical features, but his pride in his profession, his untiring energy, and the vast amount of work accomplished in so short a time impressed me most favorably.

SOUNDINGS FOR BED ROCK.

The soundings for bed rock were made under my supervision in the following manner: The rods were of octagonal cast steel, pointed as a square pyramid, one, for shallow soundings, of one-half inch steel 18 feet long, another three-fourths of an inch and 32 feet long for medium soundings, and still another double rod, jointed in two sections, of 1 inch, 26 feet long each, for the deeper soundings. A tripod 20 feet high with a ring in its apex was necessary to keep these flexible rods in a perpendicular position while being worked by four men, with two iron clamp bars arranged to adjust to any part of the rod as it passed down. The entire 3 miles of the pass were prospected for the bed rock at all points where the walls of the canyon rendered it practicable to build a dam; but only two available sites were found, the 52-foot rod failing to touch bottom at other points.

These two sites are described in detail by Mr. Follett in his report, on pages 2, 3, 16, and 17 and maps Nos. 2 and 3. It is not absolutely certain that the true bed rock exists as described in the soundings or, if it does exist, that it is free from faults or rifts or of such a quality as to support a dam of the kind designed, but every evidence possible with such soundings was obtained, being the more positive at the lower site by reason of the rock being so much nearer the surface and the friction on the rods consequently much less. The rod rang out clearly when in contact with the rock at the lower site, while at the upper it was dull and indefinite. Before any permanent work is commenced, the fact of the existence of suitable bed rock should be determined by boring out cores from it with a diamond drill.

RELATIVE MERITS OF THE TWO DAM SITES.

The upper site has but two advantages over the lower one; the first being that it is of sufficient distance from the Santa Fe depot to allow

¹For further continuous observations on flow of water and sediment after the date of this report, see Appendix B, embracing extract from the Eleventh Annual Report Geological Survey, Part II, pages 52 to 57 inclusive, with diagram of sediment and discharge.

that line to be rebuilt on its ruling grade and rise above the dam, which it is impossible to do from the lower site, it being but 2 miles from the depot; the second, that the walls of the canyon will allow the dam to be built higher should it ever be desired.

The lower site has many advantages over the upper one: First, the cost will probably be one-half that of the upper, the bed rock being but 22 feet from the water level at its deepest part, and for the greater distance across the channel from 2 to 9 feet only, while the upper site is from 30 to 50 feet for the entire cross section. The old Mexican dam, which has a fall of about 12 feet, is about 1,000 yards below this site, and by breaking this and opening a channel through the sand to this site I think the water could be lowered 8 or 10 feet, so that the bed rock for the greater part of the cross section would be presented above the water. It would be necessary, of course, to do this in a season of low water, and perhaps to flume the channel with lumber. In this manner I think this dam might be completed in one year, and, if commenced at the right season, the flood waters of that year reserved. At the upper site it would take one year to build the cofferdams and get the masonry above water. I have suggested in pencil on Mr. Follett's map No. 3 a double curvilinear dam, with three heavy buttresses, which I think well adapted to that site. These buttresses could be built in the manner indicated by moving the middle one a little nearer the left bank than shown by the pencil mark, entirely out of water. Other advantages are that one end of the dam would be on Mexican soil and that $1\frac{1}{2}$ miles of expensive and difficult canals on either side would be avoided.

To have the benefit of these advantages, however, it is necessary to get the Santa Fe Railroad above the water in the lake. It will be observed that the Southern Pacific in its north-bound course leaves the valley just before reaching the lower dam site and climbs the bluff behind the smelter, crossing two arroyas marked A and B on Mr. Follett's map No. 1, and on a down grade before reaching the bridge. It has occurred to me that the two roads might be adjusted to use a common double track from Fort Bliss, with a cut about 15 feet deep in the bluff behind the smelter and by a strong retaining wall built on the fills in the two arroyas mentioned, so that their tracks would be some 10 or 12 feet below the surface of the lake behind these walls and yet gain an altitude before reaching the third arroya near the present bridge sufficient to carry them above the waters of the lake. The problem then would be to cross the Southern Pacific over the broad river's channel by heavy and well-ballasted crib piers rising to near the surface of low water in the lake so that all the woodwork might be well preserved by submersion, and a superstructure of such a nature as to be restored independently. If this be practicable it will solve the difficult problem of putting one end of the dam in Mexico and keeping both railroads exclusively in the United States.

The laws of Texas require joint or union depots in cities where railroads cross each other, and sooner or later the railroads in El Paso will be required to comply with them. Should the dam be built, the radical changes wrought in the two roads mentioned above will no doubt hasten other adjustments in the city, and, as neither have any permanent depots, will probably result in a union depot, in which case the Southern Pacific would doubtless depart west on the south side of the Santa Fe, which would obviate the present crossing, which gives trouble in any adjustment for the dam.

I beg to recommend that on the first intimation of favorable consideration by Congress of this project that an engineer be sent here to investigate the practicability of this double track and retaining wall for the easement of the grade of the Santa Fe to enable it to rise over the water of the lake formed by a dam at the lower site.

AGRICULTURAL FEATURES.

The land that would be brought under a high-line ditch from this lake, with a fall of 12 inches to the mile for 60 miles below, would be over 100,000 acres, consisting of about 20,000 above the flood waters of the river and below the waters of the highest ditches now in operation, which would hardly be considered as being redeemed by the project. About 40,000 acres are below the highest flood waters of the river, and about 40,000 more are above the waters of the highest ditches in operation, yet would be below the high-line ditch from the lake, so that 80,000 acres would be redeemed and could be justly taxed for water rights should the Government see proper to reimburse itself for the investment. On the Mexican side there would be perhaps 125,000 acres to be brought under their high-line ditch. This estimate is approximate only, no surveys having been made as on our side, though an engineer is about to commence the work.

WATER POWER.

The water power made available by the construction of this dam would be of great magnitude. If, as before assumed, the mean annual flow of the river is 1,200 cubic feet per second, and one-half that quantity can be utilized in a fall of 50 feet over the dam or from the high-line canals below to the lowlands for irrigation, we should have 600 cubic feet per second, or 36,000 cubic feet per minute. Assuming the weight of a cubic foot of water to be 62 pounds, we have 2,232,000 pounds falling a distance of 50 feet each minute, or 111,600,000 falling 1 foot each minute, which, divided by 33,000, gives us 3,381 constant horsepower, or 10,143 horsepower, less, of course, loss by friction, for eight hours every day in the year. There are few cities on the continent possessing such vast water power, and by reason of high price of coal here it would be of greatest value to the citizens of the sister Republics in this locality. The leasing of this power, should it be thought proper, would produce another revenue for reimbursement.

VESTED WATER RIGHTS.

The records of Jaurez, formerly Paso del Norte, clearly establish that when first settled by the Spaniards, over two hundred years ago, it was an Indian village subsisting partly upon vegetables raised by irrigation from a ditch and dam in the same location as the one now in existence; that this was a loose, boulder-stone dam, yearly repaired by piling boulders on those not carried away and buried in the quicksand below by the floods of the preceding year. This process was continued until within the last six years, when efforts have been made to form a cement cresting on the dam, but it, too, has been annually destroyed. In 1827 Juan Maria Ponce de Leon made the first settlement on the left bank of the river, on a narrow strip of land then forming under the hills opposite Paso del Norte, and by common consent took a ditch from the waters above the dam, which has been maintained for the

benefit of the residents of this side of the river to this day, without the expenditure of a single dollar in the original construction of the dam or the millions that have been spent in its repair.

On the annexation of Texas to the United States, over forty years ago, the Mexicans raised no question of assessment or expense of maintenance, but generously continued to divide with our people the waters from their dam, the product of their own labor, there being sufficient for both except in seasons of extreme drought, about once in seven years. Now has come a great change. The river has been entirely dry for nearly three months,¹ was dry for about the same period last year; the people this side have suffered, but the Mexicans on the other side have suffered much more, for the reason that their sustenance comes almost exclusively from agriculture. Should these seasons of drought be succeeded by two more, but a small portion of the population on the Mexican side could remain here, for want of subsistence. There are now about 25,000 in the valley for 50 miles below, and an equal number on the American side.

Both the Americans and the Mexicans claim that this drought in the Rio Grande is caused by the taking of numerous ditches from that river and its tributaries by the citizens of Colorado and New Mexico, and it is apparent that it is true, though I am not as well prepared to substantiate the fact as you are. By reference, however, to the Fourth Biennial Report of the State Engineer of Colorado for 1887-88, it will be observed that there are over 300 ditches taken from the Rio Grande and its tributaries in that State. (See pp. 287-325.) Most of these ditches have had but a short existence, and many others are being rapidly taken out, so that from that State alone the peril to the people here of water famine in the future seems great indeed.

The Rio Grande has a much longer passage through the Territory of New Mexico, and it is well known that much water is being in like manner taken out from that river and its tributaries in an increased proportion each year, though I am unable to find any official statistics on the subject.

The Mexicans are in great distress, yet protest patiently that they are being deprived of vested rights inherited for many generations, and that according to riparian laws the United States is under a moral obligation to indemnify them for their loss or make some reparation, such as the construction of the projected dam and reservoir. I am not qualified to discuss the legal aspects of this case, but leave it to other hands.

BOUNDARY LINE.

The "deepest channel" of the Rio Grande, except when "changed abruptly into a new bed by eruption or avulsion," is understood to be the boundary line between the United States and Mexico. The prime object of this project is to fix and control that boundary.²

¹ Superintendent Ennis, Southern Pacific, has since informed me that the wells of his road between this place and Hancock are failing.

² It is certain that it will do this for at least 200 miles below if a comparatively constant flow of clear water unburdened by silt is allowed to pass through the dam into the channel constantly, and the channel straightened and shortened by numerous cut-offs in the great bends, so as to give greater fall and a better alignment; below 200 miles the river has two considerable confluents, in the Pecos from Texas and the Concho from Mexico, the floods of which may possibly cause some changes, as they carry considerable silt.

I believe the reservoir in the lake will, in the main, control the boundary line from these tributaries to the Gulf of Mexico.

For the past forty years the river has been so continuously shifting its bed from one side of the valley lands to the other with each succeeding flood of water (in many cases unknown whether by avulsion or gradual erosion and deposit) that it is impossible to determine to which nation the land on either bank of the river belongs for a great portion of the distance through the alluvial valleys, to say nothing of the fact that these lands are almost valueless by being submerged and rendered impracticable of permanent occupancy.

Then, too, come the difficulties to both nations in the prevention of smuggling and the arrest and punishment of criminals on account of doubtful jurisdiction. Mr. Hitt, of the Committee on Foreign Affairs of the House of Representatives, first session Fiftieth Congress, in his report to accompany H. R. No. 112 on International Commission with Mexico, a copy of which is attached hereto, marked C, has more completely and intelligently described these difficulties than I am able to do.

In order to illustrate graphically the changes made by the river, Mr. Townsend, the judge of El Paso County, with the approval of the commissioners, directed their surveyor, Mr. Heldt, at the expense of the county, to make the necessary surveys to determine the exact location of the river at this date, and from these field notes and the surveys of other dates on file in his office to compile a map showing the changes that have taken place in the past forty years between the New Mexican line and Fort Hancock; also to ascertain the quantity of land that would be brought under the ditch by running a line of levels for a high-line canal (to be taken from the proposed lake) from Fabens to Fort Hancock. This map was gratuitously furnished me for the use of the Geological Survey, and is forwarded herewith, marked D. It is on a scale of 2,000 feet to the inch.¹

Mr. Heldt selected the two periods of 1849 and 1854 as showing the greater number of surveys made and the greater changes in the river's bed compared with its present location.

The line marked "Rio Grande, 1849," shows the river at that date, about which time it suddenly changed from the extreme northeastern side of the valley to the extreme southwestern side, a distance of 30 miles, and in some places 7 miles laterally. The line marked "Rio Grande, 1854," shows the river between that date and 1860 from the field notes of nearly all the surveys on its front, the greater number of which I made myself. The line marked "Rio Grande, 1889," shows correctly the river at this date.

The letters A A A A A show the points where the river could be straightened and shortened as before mentioned.

The letters B B show two large tracts of land thrown on the southwest side of the river by sudden "eruption or avulsion" by the floods of 1884, still remaining as part of the domain of the State of Texas and the United States, though on the Mexican side of the river.

To illustrate the manifold complications yearly arising in this delicate boundary question, the dotted red line in the larger tract of land marked B, still in Texas though on the Mexican side of the Rio Grande, represents a Mexican "acequia" or irrigating ditch taken out of the Rio Grande in Texas and carried over 3 miles on Texan soil to irrigate Mexican lands below.

The dotted line under the letter D shows some 15 miles of abandoned line of the Galveston, Harrisburg and San Antonio Railroad destroyed by this same flood of 1884.

¹ Not printed.

The letter C marks the line of levels run by Mr. Heldt from Fabens to Hancock for the high-line ditch from the dam; it was not necessary to run it from the dam to Fabens, as it would not rise over the bluffs above that point, and it was easy to get his elevation datum there from the elevation of the Southern Pacific Railroad. The number of acres that would be brought below this ditch between El Paso and Fort Hancock, a distance of 54 miles, and the river in its present location is about 90,000, and the straightening of the river by the cut-offs before mentioned will not materially change the quantity.

I was informed some time ago by Mr. Garfias, the Mexican federal engineer, that his Government had ordered an engineer to Juarez to make a similar survey of the river and lands on the Mexican side, together with a line of levels for a high-line ditch from the dam. I had hoped to procure a copy of his map to forward with this one for comparison, but the delay would be too great. When completed, I will forward it separately.

INTERNATIONAL FEATURES.

As the waters of the Rio Grande as well as the boundary line belong jointly to the two nations, this project can never be carried out without their perfect concord in purpose and action, and, in view of the evident prior rights of the Mexicans and the equally evident fact that they are being deprived of them by the citizens of the United States in Colorado and New Mexico, and the further consideration that they have furnished water from their dam untaxed for forty years to the citizens of the United States on this side, I recommend that the United States Congress take the initiative by making an appropriation to cover the entire expense of the work save the one-half the expense of the dam proper, conditioned only that the Mexican Government shall appropriate a sufficient sum to cover the expense of constructing the other half of the dam and accept this action on the part of the United States as full indemnification for their prior rights alleged to have been usurped by the people of Colorado and New Mexico, and that an international commission similar to the one proposed in the House resolution before referred to be organized for the double purpose of supervising the construction of the dam, changing and straightening the channel of the river, and establishing a permanent international boundary to forever coincide therewith, as far below El Paso as the dam may prove effectual in maintaining a constant channel.

CONSTRUCTION.

As under the most favorable circumstances, with the success of an appropriation for both Governments this winter, at least one season must pass, probably two and possibly three, before the waters from the dam can be available, and that in all likelihood these seasons will be like the present and past, depriving the Mexican citizens of El Canton del Bravo of occupation and means of support, I further recommend that, for the purpose of the entire construction of this project in rebuilding the railroads as well as the construction of the dam proper, the alien-labor act be suspended so far as it applies to that canton of the Republic of Mexico.

In conclusion, I beg to say that I think the construction of this work essential to the continued existence of these frontier settlements. I believe it an obligation justly due from the Government of the United

States to the Americans and Mexicans composing them; that in accomplishing it the Government will be availing itself of the grandest opportunity to set before the whole people an "object lesson" of the very first magnitude in the line of that great national development of redemption of arid wastes now dawning upon the country, and giving promise to exceed all others with which it has been blessed, without compromising its future action in similar internal projects, because this, being international and more a question of the rectification of an international boundary, is unique.

I am, very respectfully, your obedient servant,

ANSON MILLS,

Major, Tenth Cavalry, Supervising Engineer.

Col. E. S. NETTLETON,

*Supervising Engineer, U. S. Geological Survey,
Denver, Colo.*

REPORT OF W. W. FOLLETT,

Civil Engineer.

EL PASO, TEX., *September 18, 1889.*

DEAR SIR: In Denver, Colo., on July 6, I was instructed by Mr. E. S. Nettleton, supervising engineer of the survey of the arid regions, a branch of the United States Geological Survey, to proceed to El Paso and there make an examination, survey, estimate of cost, and report on a construction of a dam and reservoir in the valley of the Rio Grande above that place.

This work was for the purpose of developing your plan for controlling the channel of the Rio Grande below El Paso, and, as this channel forms the international boundary line, of rendering it permanent.

I have now completed my work, and with this report transmit 1 large map of reservoir site, scale 1,000 feet equal 1 inch, marked No. I; 1 contour map of upper dam site, scale 50 feet equal 1 inch, marked No. II; 1 contour map of lower dam site, scale 50 feet equal 1 inch, marked No. III; 1 cross section of river valley at upper dam site, with sketch of proposed dam and by-wash and cross section of dam, scales vertical 12 feet equal 1 inch, horizontal 40 feet equal 1 inch, marked No. IV; 1 set of cross sections of reservoir site (cross sections A, B, C, D, E, F, and G), scales vertical 20 feet equal 1 inch, horizontal 400 feet equal 1 inch, marked No. V; 1 profile of proposed change of line of the Southern Pacific Railroad, scales vertical 20 feet equal 1 inch, horizontal 400 feet equal 1 inch, marked No. VI; 1 profile of the proposed change of the line of the Rio Grande and El Paso Railroad (Atchison, Topeka and Santa Fe Railroad), scales vertical 20 feet equal 1 inch, horizontal 400 feet equal 1 inch, marked No. VII; 7 notebooks, containing field notes of the survey.¹

The following is my report:

I. COMPARISON OF SITES FOR DAM.

The work I have done is all preliminary work. It is not intended to show what should be done, but what can be done, and approximately the cost of doing it.

¹Only the first five maps are printed, on a single sheet and on a reduced scale. (See p. 11.)

By reference to maps 1, 2, and 3 you will see that there have been found two available sites for the dam.

These sites are about $1\frac{1}{2}$ miles apart, measuring along the axis of the valley, and the lower one is about $1\frac{1}{2}$ miles above El Paso. The configuration of the valley walls is such that a cursory examination of them would lead one to assume that the upper site is the better, as the valley there is only about two-thirds as wide as at the lower site, and with strong limestone cliffs for walls. But the soundings show that the distance below the surface of the water to hard bottom is twice as great at the upper site as at the lower. Before this fact was known, however, I had nearly completed surveys for an estimate of cost based on placing the dam at the upper location. It is for this reason that my estimate is based on that location, and not because it is necessarily the cheaper of the two or more available. It may be that more extended surveys, made with greater care than mine have been, will result in the adoption of this lower site. This is a problem to be solved in answer "What should be done?" I am answering "What can be done?"

My opinion now is that a dam built at the lower site will cost considerably less than at the upper site; that the Southern Pacific Railroad would have to be carried for about 3 miles through Mexican territory; that the grading on this 3 miles would be extremely heavy—much heavier than any made necessary by choice of the upper site; that this carrying of the railroad through a foreign country would not be willingly allowed by the railroad authorities, unless this territory was ceded to the United States, and that the ruling gradient of the Santa Fe would have to be exceeded to get them up over the lake, where their line would first strike it.

This is a statement of the engineering question only, and is an expression of opinion which further surveys and estimates may show to be erroneous. A consideration of the international problem in connection with the cost may show the lower to be the more available site.

II. DATUM AND CARDINAL ELEVATIONS.

The survey and estimate are made on the assumption that a dam is built with a crest (or crest of by-wash) 60 feet above the level of the water in the river at the upper dam site when the river is carrying about 1,000 cubic feet per second, this being considerably below the mean spring and early summer flow.

The datum assumed for the levels is that of the Southern Pacific Railroad, Atlantic System, and is supposed to be mean level of water in the Gulf of Mexico. From this datum the assumed crest of by-wash, determined as above indicated, is 3,773.5; crest of dam, 3,778; bottom of dam on which estimate is based, 3,664; elevation of edge of lake and of flow line shown on map, 3,775.5.

III. SIZE OF RESERVOIR.

Working from the elevations given in the preceding paragraph, it is found that a lake will be formed whose extreme length, when water is running over the by-wash 2 feet deep, will be $14\frac{1}{2}$ miles above the upper site; its extreme width will be nearly 4 miles, this width being near its upper end, and it will cover over 26,000 acres, having an aver-

age depth of 23.6 feet. Its extreme depth will be, in the channel just above the dam, about 65 feet. This is with water running over the by-wash 2 feet deep, a depth which will probably never be exceeded. (See p. 20.)

With the water just level with the crest of the by-wash the area covered will be 24,900 acres, the average depth 21.6 feet, and the total cubic content 537,340 acre-feet, of which 198,600 acre-feet will be contained in the upper 10 feet of the lake. This last amount is available for irrigating purposes and will irrigate that number of acres.

COMPUTATION OF CONTENTS.

The following areas are taken from Profile No. 5:

Cross section.	Areas below 3,763.5.	Areas between 3,763.5 and 735.
	<i>Square feet.</i>	<i>Square feet.</i>
A.....	49,900	13,075
B.....	340,000	88,100
C.....	307,300	101,050
D.....	269,500	131,350
E.....	237,900	166,175
F.....	68,400	176,400
G.....	5,200	117,000

These areas are actual areas where cross sections were run. By referring to Map No. 1 and joining the ends of adjacent cross sections it will be seen that these are not in all cases typical cross sections. They are not parallel either, being run as near as might be at right angles to the axis of the valley. By careful study of the map, aided by personal knowledge of the ground, I deduced the following changes to determine typical cross sections, and also the proper distances by which to multiply to obtain the cubic content:

FIRST. BELOW 3,763.5.

Above cross section G: Area of G typical for lower end; area of upper end equal 0.

Multiply by 3,000 feet.

G to F: Both typical, multiply by 9,400 feet.

F to E: Both typical, multiply by 11,000 feet.

E to D: Add to both 900 feet of average at west end; average depth E equal 15 feet; average depth D equal 22 feet.

Multiply by 12,200 feet.

D to C: Add to both 600 feet of average depth above railroad at east end; average depth D equal 20 feet; average depth of C equal 22 feet.

Multiply by 10,800 feet.

C to B, C typical: Add to B 500 feet of average depth in valley on east side; this average depth equal 46 feet.

Multiply by 12,100 feet.

B to B': Assume that the valley has the same cross section as at B for 4,300 feet downstream.

B' to A: Both cross sections typical.

Multiply by 1,800 feet.

A to dam: Assume average cross section as equal to A.

Multiply by 5,500 feet.

		Cubic feet.
Above G.....	$5,200 \times \frac{3,000}{2} =$	7,800,000
G to F.....	$73,600 \times \frac{9,400}{2} =$	345,920,000
F to E.....	$306,300 \times \frac{11,000}{2} =$	1,684,650,000
E to D.....	$540,700 \times \frac{12,200}{2} =$	3,298,270,000
D to C.....	$602,000 \times \frac{10,800}{2} =$	3,250,800,000
C to B.....	$674,300 \times \frac{12,100}{2} =$	4,079,515,000
B to B'.....	$340,000 \times 4,300 =$	1,462,000,000
B' to A.....	$389,900 \times \frac{1,800}{2} =$	350,900,000
A to dam.....	$49,900 \times 5,500 =$	274,450,000
Total.....		14,754,315,000
$\frac{14,754,315,000}{43,560} = 338,712 \text{ acre-feet.}$		

SECOND. BETWEEN 3,763.5 AND 3,773.5

This amount is available for use in irrigation ditches. As before, use following areas as typical; use same distances except above G.

Above G: Area of G typical for lower end; area of upper end equal 0.

Multiply by 7,000 feet.

G to F: Add 4,000 square feet (equal 400×10) to G-F, typical.

F to E: Both typical.

E to D: Add to each 9,000 square feet (equal 900×10).

D to C: Add to each 6,000 square feet (equal 600×10).

C to B: Add to C 5,000 square feet (equal 500×10).

B to B: B typical.

B to A: B and A typical.

A to dam: A typical for both.

		Cubic feet.
Above G.....	$117,000 \times \frac{7,000}{2} \div 2 =$	409,500,000
G to F.....	$297,400 \times \frac{9,400}{2} \div 2 =$	1,397,780,000
F to E.....	$342,575 \times \frac{11,000}{2} \div 2 =$	1,884,162,500
E to D.....	$315,575 \times \frac{12,200}{2} \div 2 =$	1,924,702,500
D to C.....	$244,400 \times \frac{10,800}{2} \div 2 =$	1,319,760,000
C to B.....	$194,150 \times \frac{12,100}{2} \div 2 =$	1,174,607,500
B to B.....	$88,100 \times 4,300 \div 2 =$	378,830,000
B to A.....	$101,175 \times \frac{1,800}{2} \div 2 =$	91,057,500
A to dam.....	$13,075 \times 5,500 \div 2 =$	71,912,500
Total.....		8,652,312,500
$\frac{8,652,312,500}{43,560} = 198,630 + \text{acre-feet.}$		

These quantities are so vast that one fails to grasp their meaning without some study. It will aid one to understand them to compare this with the two largest reservoir schemes now on foot in the United States.

The San Mateo Dam, about 20 miles from San Francisco, is now under construction; when completed, it will be 170 feet high above bed rock, about 700 feet long on top, and will impound 32,000,000,000 gallons of water. This, reduced to our unit, equals 98,200 acre-feet, or between one-fifth and one-sixth of the contents of this reservoir.

The Quaker Bridge Dam is projected to be built across the valley of the Croton River, near the Quaker Bridge, above the city of New York. As now designed the dam would be 270 feet high above rock, 1,350 feet long on top, would cost, exclusive of reservoir site, over \$4,000,000, and would impound a reservoir covering 3,900 acres and containing 32,000,000,000 gallons, or 98,200 acre-feet, the same as the San Mateo Dam.

We would here, by a dam only 114 feet high at the extreme point and 590 feet long on top, impound between five and six times as much water as either of the dams mentioned, and would have available, for what are called "high line canals," over twice as much water as their total contents.

IV. TIME REQUIRED TO FILL RESERVOIR.

A gauging station was established in the Rio Grande at El Paso in May, 1889. The maximum flow observed at that time was 4,300 cubic feet per second. The river gradually fell away until it finally went dry and stopped flowing about August 5. It is now dry and probably will continue so until near November 1. From the best data now obtainable, it is probable that the river reaches at times a flow of 6,000 cubic feet per second. It is probable that the average yearly flow is about 1,200 cubic feet per second. Of this, 400 cubic feet per second must be let pass for six months of the year for irrigation; the other six months about 200 cubic feet per second for use along the river, leaving an average of 900 cubic feet per second available during the whole year with which to fill the reservoir. With this flow and no loss from percolation and evaporation it would take 283 days to fill the reservoir; but from this lake the evaporation will probably be about $6\frac{1}{2}$ feet per annum, or 0.214 inch per day; 0.214 inch per day over 20,000 acres (an average area while the lake is filling) equals 15,536,400 cubic feet per day, equals 180 cubic feet per second.

This leaves available for filling reservoir 900 minus 180, equals 720 cubic feet per second, or 80 per cent of the original available flow. With this, provided there were no percolation, it would take 354 days, say one year, to fill the reservoir. But in the sand hills, which will form the banks of the lake, there will be an excessive amount of percolation, and it is safe to say that it will be two years after the dam is closed before the lake is filled.

V. FLOOD WATER STORAGE.

It is intended to use the upper 10 feet of the reservoir both for the storage of irrigation water and for the storage of flood waters. As the irrigation season begins in February and the flood flow of the river

comes in April or May these two purposes are not conflicting. The aim must be to enter April with the water at a rather low stage, say 8 feet below the crest of the by-wash.

This, over 22,000 acres, will give a storage of 176,000 acre-feet. The river when flowing 6,000 cubic feet per second will carry 11,900 acre-feet per day. Half this amount can be allowed to pass the dam, going down the channel and the ditches. The other half is what we must store, and our 8 feet will hold 30 days of this flow, which is a longer continued flood of 6,000 cubic feet per second than we can find any record of. So the reservoir will fulfill satisfactorily the primary object of its construction, viz, storing flood waters, so preventing eroding floods in the river below El Paso.

VI. SEDIMENT.

In the flood season the river brings down a great deal of sediment. Your investigations show that for short periods the amount of sediment carried by the water may be as high as 2 per cent and that it will possibly average one-half of 1 per cent for the whole year.

Our first computation showed that three-fourths of the river's average flow would fill the reservoir in 283 days, but the other one-fourth will deposit its silt in the lake, so that in discussing the sediment we must assume that all the river's flow is impounded and drops its silt, or that the reservoir will be filled with water in three-fourths of 283 days, or in 212 days, or 7 months. From this we see that a percentage even so low as one-half of 1 per cent of silt would fill the reservoir with mud in 115 years; and that this is not taking into account the sediment which travels on the bottom of the river, nor the detritus coming into the sides of the lake from local rains.

Smaller reservoirs are cleaned by flushing or suddenly letting the water out through an opening in the dam near its base. We can not use that system to clean out this reservoir, owing to its great size and the flat slope of its bed. It would be fifty years or more before any sediment were deposited near enough to the dam to be even partially disturbed by flushing arrangements.

So great is the capacity of the reservoir that a flushing tunnel would have to be used of very large size, so large that its opening would in a very short time undo all that had been done in controlling the river channel, as it would cause a flood sufficient to erode the banks of the river with great rapidity. Again, if such a flushing arrangement were adopted, its use would be disastrous to the river valley below in still another way. The water, heavily charged with silt, would, as soon as its velocity became reduced, drop the greater part of its sediment, filling up the river channel; the water would then flood the valley lands, causing much damage to vineyards and orchards.

It will not do, however, to allow the lake to fill up. This sediment must be at least partially removed from the water before it enters the lake. To do this a small reservoir can be built farther up the valley of the Rio Grande, and when it fills up another one can be built, thus postponing indefinitely the filling up of the lower and larger reservoir.

I have made no examinations of available sites for these settling reservoirs, but will probably do so before the close of the year. In case I do I will furnish you the information obtained in a supplemental report.

At various points along the banks of the lake gulches enter it, which carry the drainage of steep hillsides having no vegetation whatever on them. The slope of these gulches is steep, being from 2 to 4 per cent near their lower ends and increasing rapidly as they near the hills. When the greater part of the annual rainfall is precipitated in fifteen or twenty minutes, as sometimes occurs here, these gulches become raging torrents, carrying large quantities of detritus; this must be kept out of the lake. Fortunately, nearly every gulch of this kind is crossed by the proposed line of either the Southern Pacific or Santa Fe railroads, and the railroad can be carried across them on a solid bank, having through it 15 to 20 feet above its base two or more 24-inch drain pipes. This will make of each gulch a small settling reservoir, which, as the heavy rainfalls only come once in two or three years, will be many years in filling up. There will be little or no danger of washing out the railroad embankment, as it will be of very heavy material—mostly of rock—and with its top 15 to 20 feet higher than the drain pipes.

VII. AREA OF LAKE.

To make an estimate of acreage, I checked my map off into squares, containing 40 acres each, and so counted up the acres, estimating the fraction of squares at the sides of the lake. This method depends for its accuracy on the closeness with which the map scales. As my traverse line, from which the map was platted, makes the lake somewhat wider at the upper end than the cross sections show it to be, my estimate of acreage is probably a little large.

My time on the survey was so limited that I could not traverse the channel of the river. This was unfortunate, as it forms the boundary line between Texas and New Mexico and so divides the land holdings on its two banks. I, however, have located it on the map with a fair degree of accuracy and on the location there shown the following estimates of acreage are based:

First, Texas lands.—A careful compilation of the records of the surveys on file at the county court-house here, and the platting of them on my map from connections from corners known to be correct, shows some very serious conflicts. By reference to map No. 1 you will see that surveys Nos. 262, 263, 264, and 265 overlap a mile onto the "El Canutillo" grant, an old Spanish grant now patented, and that patents have been issued for Nos. 263 and 265. Also that surveys Nos. 259, 260, 261, and 262 extend over into the sand hills of New Mexico (the margin of the proposed lake being from 500 to 1,000 feet back in the sand hills, and those surveys overlapping that). Also that surveys Nos. 163 to 171 seem to have been moved 1,700 feet west. (See dotted lines marked "The plats on file show Santa Fe R. R. here.")¹

I have, where conflicts occur, taken the older claims as correct, and have so computed the acreage, and find in Texas 15,200 acres of patented land and 1,630 acres surveyed but not patented, being mostly those portions of surveys Nos. 260, 262, and 264 which do not overlies lands patented on other surveys, a little east of "El Canutillo," and some east of surveys Nos. 163 and 164.

This patented land is almost all swamp land. Not over 50 acres is cultivated, though about 100 acres have been recently under cultiva-

¹ Land surveys not shown on printed map.

tion. About one-fourth of it is moderately well timbered, mostly with cottonwoods. The other three-fourths is composed of tornillo thickets and sand bars, some naked and others overgrown with willow, and flat lands, which overflow every time the river rises, and yearly produce a fair crop of cockleburrs.

The soil is all rich, as alluvial bottoms invariably are, and could it be protected from high water, cleared of brush and timber, and supplied with water for irrigation, would be valuable. In its present condition, however, I fail to see how any of it can be worth over \$5 per acre. This would be for the one-fourth timbered, or for, say, 3,800 acres. Of the balance, one-half, or 5,700 acres, is worth \$2 per acre, and one-half, or 5,700 acres, \$1 per acre, being sand bars and mud flats.

There are some five adobe houses which would be flooded. These are probably worth \$300 apiece. At Canutillo there are some seven pole and mud houses of fair size, worth \$100 apiece. The State land would probably be donated by the State of Texas, so no value is placed on it.

There is a limekiln about one-half mile above the upper dam site which would be flooded. Though small, it is well built, substantial affair, in almost constant use. A fair value for this would be \$1,000, as all flues, pipes, etc., connected with it can be removed.

Summary of Texas lands.

3,800 acres of timber land, at \$5.....	\$19,000
5,700 acres of land not overflowed, at \$2.....	11,400
5,700 acres of sand bars and overflowed land, at \$1.....	5,700
1 limekiln	1,000
5 adobe houses, at \$300.....	1,500
7 pole houses, at \$100	700
Total	39,300

Second, New Mexico lands.—All lands to be submerged on the west bank of the Rio Grande form a part of two large Spanish grants, neither of which is patented. These two grants are the Francisco Garcia grant and the Refugio Colony grant. The former is at the lower end of the lake, and has no improvements whatever on it, except a very little fence. It was surveyed in 1883, its eastern boundary as then located being the river channel. As it is not confirmed, and as there are no improvements, some amicable arrangement could probably be made with the claimants to take in lieu of it land equally as good elsewhere, making this portion of the site cost nothing. There are 3,120 acres of this.

The Refugio Colony grant lies above the Garcia. It was surveyed in 1877. In tracing its eastern boundary the surveyor evidently followed the most easterly sign of an old channel he could find, as (see map No. 1) he ran away over into Texas, taking in almost all of the surveys Nos. 34 and 172, and all of Nos. 163, 164, 165, 166, and 167, and some unpatented land east of them. There is an old channel which he followed, as I saw it in several places, but I can see no reason why he should have assumed that it was the eastern boundary of this claim rather than any other of a dozen or more old channels he could have traced through the swamp, or rather than the main river, except that it was farthest east and gave the grant more land. I have assumed the main channel of the river to be its eastern boundary, regardless of this survey.

The lake would submerge 6,320 acres of it. Of this about 2,500 acres is cleared and under ditch. Probably 2,000 acres of it has been cultivated. To clear and break this land cost an average of \$3 per acre for 2,000 acres. As is usual with the Mexicans, only a small portion is cultivated each year. This season some 500 or 600 acres were in crop. They have about 8 or 9 miles of irrigation ditches 6 feet wide and carrying from 1½ to 2 feet of water. To build these probably cost, at 8 cents per cubic yard, allowing an end area of 64 square feet, \$9,000 for 9 miles. Their lateral ditches are all small and of little value, the water being taken directly from the Acequia Madre. In the bottom lands are ten or twelve adobe houses, with corrals, etc., at each. These will average larger than those on the Texas side, and are worth about \$400 each.

The little town of La Union stands just above the margin of the lake. It would not be submerged, but would have to be abandoned, as its inhabitants are dependent for sustenance and employment upon the adjacent bottom lands. There are some twenty adobe houses. Some of them are of large size. A fair estimate of value is \$500 per house. As with the Garcia claimants, the claimants of this land could probably be induced to take other land, but these improvements must be paid for.

Summary of Refugio Colony improvements.

2,000 acres of land cleared and broken, at \$3	\$6,000
9 miles of irrigation ditches, at \$1,000	9,000
12 adobe ranch houses, at \$400	4,800
20 adobe houses at La Union, at \$500	10,000

Total	29,800
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Total cost of site.

Texas lands	\$39,300
New Mexico lands	29,800
Total cost	69,100

VIII. UPPER SITE FOR DAM.

As before stated, this report is confined to a discussion of the upper site chosen for the dam.

Referring to map No. 2, it is seen that the dam as there located is placed at the extreme lower end of a pass whose full length, not shown on map No. 2, is about 1,000 feet. The reason of this location is that no hard bottom could be found with a 50-foot sounding rod at any other part in the pass except at this lower end; here it varies from 8 to 50 feet below mean water in the river. The bottom found is probably a soft limestone. The rod would not ring when churned on it, but could not be churned or driven into it.

Plan No. 4 shows a cross section of the valley, taken on the line marked E E on map No. 2. Examination of this shows that the soundings indicate a channel in the rock near each bank with a hill between them. It may be possible that it will be necessary, in order to obtain solid foundation, to remove this hill, bringing the rock bottom down to the level of the two channels. The fact that a line of soundings taken on the line G G, 100 feet downstream from E E, shows the bottom almost level, and at an elevation but little above that of the channels where they cross E E, would indicate that this might have to be

done. While this may arise, I do not think it will, and so have made an estimate of cost based on a footing of the dam being carried down to a depth shown on map No. 4 by the stepped red line.

The walls of this canyon are of limestone, some of which is very hard and solid. It is, however, traversed by layers of small limestone firmly cemented together. This does not present a very solid appearance to a first examination, but careful study of it has convinced me that it will be practically impervious to water even under 60 or 80 feet head. There are also many dry seams running through the limestone, but none of them are continuous. In other words, the rock has no defined planes of cleavage. These seams will not be at all likely to give any trouble.

IX. DESIGN OF DAM.

While a curved dam is for many reasons, which it is not necessary to here enumerate, preferable to a straight one, the configuration of this site is such as to force us to use a straight one. The problem is to get the ends of the dam as far upstream as possible, so as to get the benefit of the bluffs, but keeping the center as far downstream as possible, so as to set it squarely on the rock hill shown by the soundings to exist in the river's bottom. The only solution of this is a straight dam.

The height of the dam's crest I have adopted is datum elevation, 3,778 feet, or $4\frac{1}{2}$ feet above the crest of the waste weir. As with a length of waste weir of 200 feet water flowing over it $4\frac{1}{2}$ feet deep would be passing 6,300 cubic feet per second, and the six 48-inch pipes under 53 feet head, would be passing 4,840 cubic feet more, and as the maximum flow of the river of which we can find a record is 6,000 cubic feet this height is evidently sufficient to insure that no water will ever flow over the crest of the dam.

The cross section adopted (see plat No. 4) is one derived from the profile recommended by Mr. Alphonse Fteley for adoption at Quaker Bridge, New York, and is "practical profile No. 2" of Wegmann's "Design and construction of masonry dams." It is computed on the assumption that the specific gravity of the masonry is $2\frac{1}{4}$, or its weight 145.83 pounds per cubic foot. The material which will be used in this dam will probably weigh a little more than that, but the resultant difference in the required cross section of the dam will be very little (a difference in weight of 10 pounds per cubic foot of masonry, changing the cross-sectional area of a dam 100 feet high only 3 per cent). As this masonry will probably weigh more than 146 pounds per cubic foot, the necessary cross section will be smaller than the one shown on plat No. 4.

The maximum pressure on the toe of this dam at its extreme height of 114 feet will be 8.18 short tons per square foot when the reservoir is full, and 8.46 tons when the reservoir is empty. These pressures are perfectly safe, being less than 60 per cent of those which the foundation courses of the Quaker Bridge Dam would have to sustain if it were built in accordance with Mr. Fteley's design.

The two conditions of stability in a masonry dam are that the resultant lines of pressure, when the reservoir is full and when it is empty, must lie in its middle third and that each horizontal joint shall offer sufficient resistance to sliding on its bed to resist the water pressure. Reference to plat No. 4 shows that the first condition is filled by this

cross section. As for the second, at every point of its height is found not less than twice the necessary resistance to sliding.

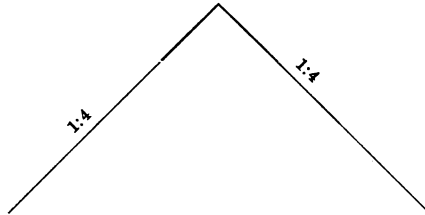
Through the dam, at a distance below the crest of the waste weir of 48½ feet, are placed six 48-inch iron pipes. These I have shown as being built into the solid masonry. It may be thought best on further investigation to place them in a chamber so that they may be accessible. These pipes are for passing the water necessary to be sent downstream when the water is level with or below the crest of the weir.

The following is the discharge of water through a 48-inch pipe 35 feet long (the length these will be) under varying heads:

Under—	Cubic feet per second.
36 feet head.....	665.0
38 feet head.....	683.2
40 feet head.....	701.0
42 feet head.....	718.3
44 feet head.....	735.2
46 feet head.....	751.7
48 feet head.....	767.9
50 feet head.....	783.7
52 feet head.....	799.2

From this it is seen that the pipes themselves can discharge 4,640 cubic feet per second when the water is just level with the waste weir, or when the pipes are under a pressure of 48½ feet head.

A waste weir 200 feet long and having a profile of its top along its axis, about as shown in sketch, will pass water as follows:



Water—	Cubic feet. per second
1.0 foot deep over weir.....	610
1.5 feet deep over weir.....	1,210
2.0 feet deep over weir.....	1,880
2.5 feet deep over weir.....	2,600
3.0 feet deep over weir.....	3,430
3.5 feet deep over weir.....	4,320
4.0 feet deep over weir.....	5,280
4.5 feet deep over weir.....	6,300
5.0 feet deep over weir.....	7,380

It is not likely that water will ever pass over the waste weir even 2 feet deep, unless the pipes should by some accident become obstructed. Of the latter, three are placed on each side so as to prevent, so far as possible, all danger of their all becoming stopped up at once.

This computation is made to show that there can be absolutely no danger of there not being vent enough provided in this plan for the passage of flood waters.

X. CONTENTS OF DAM.

The following is the computation of contents of the dam. It is divided in two parts, above and below El. 3714, to show the amount of masonry below the water level:

ABOVE 3714.

Station.	To station.	El. top.	El. bottom.	Height.	Length.	Square feet (end area).	Cubic feet.
		<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>		
0-10	0+10	3,778	3,770	8	20	80	1,600
+10	+20	3,778	62	16	10	161.7	1,617
+20	+25	3,778	54	24	5	257.8	1,289
+25	+30	3,778	46	32	5	389.1	1,945.5
+30	+40	3,778	40	38	10	517.1	5,171
+40	1	3,778	30	48	10	788.6	7,886
1	+10	3,778	22	56	10	1,058.1	10,581
+10	+20	3,778	18	60	10	1,210.2	12,102
+20	9+10	3,778	14	64	390	1,373.6	585,704.1
9+10	+20	3,778	20	58	10	1,132.2	11,322
+20	+40	3,778	26	52	20	917.5	18,390
+40	+10	3,778	32	46	10	728.5	7,285
+10	+10	3,778	44	34	10	428.8	4,288
+10	+20	3,778	52	26	10	286.6	2,866
+20	+30	3,778	58	20	10	206.8	2,068
+30	11	3,778	64	14	20	140.6	2,812
11	+30	3,778	68	10	30	100	3,000
Deduct coping 10 feet \times 550 feet \times 14.....							629,926.5
23,002.8 cubic yards above 3,714 equals							8,850
							621,026.5

$$621,076.5 \div 27 = 23,002.8 \text{ cubic yards.}$$

BELOW 3714.

Station.	To station.	El. top.	El. bottom.	Height.	Length.	Square feet (end area).	Cubic feet.
		<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>		
1+20	1+30	3,714	3,712	2	10	85.7	857
+30	+40	3,714	4	10	10	455.4	4,554
+40	2	3,714	3,690	24	10	1,203.6	12,036
2	+10	3,714	80	34	10	1,818.2	18,182
+10	+30	3,714	70	44	20	2,499.3	49,986
+30	3+40	3,714	64	50	60	2,939.9	176,394
3+40	4	3,714	80	34	10	1,818.2	18,182
4	+20	3,714	96	18	20	866.8	17,336
+20	+40	3,714	90	24	20	1,208.6	24,072
+40	5+10	3,714	86	28	20	1,441.4	28,828
5+10	+40	3,714	84	30	30	1,564.4	46,932
+40	6+20	3,714	80	34	30	1,818.2	54,546
6+20	7+10	3,714	70	44	40	2,499.3	99,972
7+10	+40	3,714	80	34	30	1,818.2	54,546
+40	8+20	3,714	90	24	30	1,203.6	36,108
8+20	9	3,714	96	18	30	866.8	26,004
Total							668,535

$$668,535 \times 27 = 27,461 \text{ cubic yards.}$$

XI. MATERIAL AND CONSTRUCTION.

About one-half to three-fourths of a mile above the upper site at the top of the cliffs forming the right bank of the river there is a very good quality of sandstone in deposits apparently sufficient to furnish enough material for this whole dam. Its transportation would, however, be expensive, and material nearly as good can be found right at hand. The limestone ridges forming the walls of the pass just above

the dam site will furnish a good hard stone for this work. This stone will not work to smooth faces without a great deal of labor, so the kind of masonry should be "Cyclopean rubble," or rubble masonry composed of the largest stones it is possible to quarry and handle. Of course they must be well bedded and backed up by smaller stones, and all interstices solidly filled. Portland cement should be used, as its cost here, compared with its strength, is less than that of Louisville cement.

The foundation of the dam, or all of it which is below 3714, ought to be put in in one season. This 24,760 cubic yards will be laid at a more rapid rate than that higher up in the dam, because no pains need be taken to keep the faces perfectly smooth so long as they conform to the required outline.

The handling of the alluvial deposit necessary to go through is a much more difficult problem. There are two ways suggesting themselves to me. One is to make use of the Poetch freezing process, to freeze a dam across the river above and another below the space to be excavated, and then pump out the sand with a sand pump. The other is to sink a line of cribs, filled with stone, above and another below the space where the foundation is to go. Some still better way may be found. The depth to be overcome is not so great (50 feet at the deepest place) that some way can not be found to overcome it at a reasonable cost. The hill of rock in the bottom of the river can be utilized in construction to divide the work into two parts and let the river run on one side while the other side is being put in.

A coping of sandstone 18 inches thick should be put on top of the dam and well clamped together and doweled to the masonry beneath, so that wave action, should any ever occur, will not rupture the crest.

XII. ESTIMATED COST OF THE DAM.

The one uncertain item in the cost of this work is that of making and keeping open the excavation in the river bed while preparing the foundation and laying the masonry up to the water line. If no material came in from behind, whatever cofferdam is used it would be necessary to move about twice as much alluvial deposit as there are yards in the dam below the water, or about 50,000 cubic yards. Whatever system is used, some material is sure to come in. It is, in my judgment, safe to say that 50 per cent as much more would come in in excess of the amount which the bilge pump could throw out as would have to be removed at first, making 75,000 cubic yards to be taken out. This can be thrown out by sand pumps very cheaply, say for 10 cents per cubic yard.

I can not say what the Poetch system of cofferdamming would cost, and so make an estimate, very rough and only intended to be an approximation of the cost of two wooden and stone cofferdams. Each cofferdam would be 360 feet long and have an average height of 35 feet. It should have an average thickness of 30 feet. Its sides would be made of solid 12 by 12 inch timber, with bottom and cross walls every 16 feet of same size timber.

360×35 feet×2×12 equals.....	302, 400 feet, B. M., in sides of one.
360×30 feet×12 equals.....	129, 600 feet, B. M., in bottom of one.
80×35 feet 23×12 equals	289, 800 feet, B. M., in partitions of one.

Total 721, 800 feet, B. M., in one cofferdam.

Or 1,443,600 feet, B. M., square timber in both.

This timber, which need not be of first quality, can be laid down at the dam site for \$18 per M feet, board measure. The labor and iron-work putting it in place will amount to, say, \$10 per M feet, board measure, or \$28 per M feet, board measure, in all.

Both dams will contain $\frac{330 \times 28 \times 30 \times 2}{27} = 20,533$ cubic yards of rock.

This can be put in very cheaply, as there is any amount of it right at hand. It will probably cost 75 cents per yard to put it in place.

The method of sinking these cribs would be about as follows:

First. Obtain by careful soundings the profile of the rock bottom along the line of the cribs.

Second. Start the construction of the cribs over the lowest place in the bottom.

Third. Fill the crib with stone and sink it as far as possible, leaving wells through the rock and the bottom, through which to pump out sand, and keeping the sides built up above the sand.

Fourth. Lengthen the crib each way as it goes down, keeping its bottom of such shape as to conform as closely as may be to the rock bottom.

Fifth. When it refuses to move farther, put on sand pumps and throw out material through the wells. Thus keep working the caisson until it takes the bottom. Then clean out the material between the cofferdams, remove all rotten or loose rocks found on the bottom, and start the masonry.

There will be a good deal of this loose rock to remove. On plat No. 4 I have shown the bottom of the dam an average of about 4 feet below what we suppose to be rock bottom.

The average width of this excavation equals 50 feet length, as for cofferdams 360 feet, making $\frac{360 \times 50 \times 4}{27} = 2,667$ cubic yards of rock

excavation, most of it below water. This will cost \$2 per cubic yard.

It will be necessary to run a bilge pump during the whole time the masonry is being laid below the water level. If the foundation is put in in one season the pump would have to run about 180 days and 180 nights, or an equivalent of 360 days. This would cost for fuel and attendance, \$7 per day.

The cost of the masonry, both below and above water, will be about as follows:

	Per cubic yard.
Quarrying rock	\$0. 75
Transporting (average haul about 600 feet) by cables or trams.....	. 25
Mason work laying	1. 45
Cement (two-fifths of a barrel Portland), at \$4.50.....	1. 80
Cost of plant, engines, etc.....	. 25
Total	4. 50

This appears like a small price per cubic yard, but is, I think, large enough to be safe.

The valves in the 48-inch pipe will cost \$1,400 each. A 12-foot length of 48-inch pipe, 1 $\frac{3}{8}$ inches thick, weighs 8,667 pounds. There would be eighteen of these lengths, and the cost per pound delivered would be about 2 $\frac{1}{2}$ cents. 8,667 by 18 equals 156,006 pounds.

No estimate of cost need be made on the waste weir, as it will be built in the quarry and need cost nothing.

Summary of cost of dam.

1,442 M., board measure, in lumber in caissons, at \$28.....	\$40,376
20,500 cubic yards of rock in caissons, at 75 cents.....	15,375
75,000 cubic yards of sand excavation, at 10 cents.....	7,500
2,670 cubic yards of rock excavation under water, at \$2.....	5,340
360 days' use of steam pump, at \$7.....	2,520
47,764 cubic yards of rubble masonry, at \$4.50.....	214,943
8,850 cubic feet coping stone, laid at 50 cents.....	4,425
156,000 pounds piping, at 2½ cents.....	4,290
6 48-inch valves, at \$1,400.....	8,400
Laying 6 pipes and valves, at \$200.....	1,200
Total.....	304,369

XIII. MOVING THE RAILROADS.

The most difficult engineering problem to solve in connection with this work is the removal from the lake's bed of the Southern Pacific and Santa Fe railroads. The two cross each other by an over-grade crossing about 1,000 feet south of the upper proposed dam site. The Southern Pacific runs on up the pass on the right bank of the river a little over a mile, then swinging around a spur of the hills, runs to the westward, and finally climbs up out of the river valley, striking out in a northwesterly direction across the plains. Its ruling gradient, both east and west bound, is 1 per cent, compensated 0.02 per degree of curvature. Its maximum curve is 10 degrees.

The Santa Fe follows up the left bank of the river for a long distance above El Paso. Its maximum south-bound grade is four-tenths per cent and north five-tenths per cent. Both compensated 0.06 per degree of curvature. Its maximum curve is 7 degrees.

The problem is to so relocate these lines that their maximum grades and curves will not be exceeded, that they will still have an overhead crossing, and that they will be high enough when first coming along-side of the lake to be above its waters.

This problem I have roughly solved, as shown in the next two sections.

XIV. REMOVAL OF THE SOUTHERN PACIFIC.

As the Santa Fe has so light a ruling gradient, it was found to be advisable to change the crossing of the two roads, reversing their positions. To do this and to obtain 21 feet clear headroom at the crossing it was necessary to lower the Southern Pacific 12 feet at the point chosen for the crossing. This point is about 1,000 feet southeast of the present one and on the south side of a deep gulch. The reasons for locating the crossing at this particular place were, first, unless the two lines cross at this place the Santa Fe would have to be carried across this gulch and another just beyond it on high trestles, which are to be avoided wherever possible. Second, unless the crossing is made at least as far south as this it would be impossible to get the Southern Pacific track high enough where it debuts on the lake without exceeding its ruling gradient. As it is (see Profile No. 6) I have to make my vertical curve south of the crossing, and the Southern Pacific track is on an upgrade under the Santa Fe. Third, as the Santa Fe is going up, approaching the crossing from the south, and the Southern Pacific down, it is needless to say that the crossing was pushed north just as far as possible.

Referring to Map No. 1 it is seen that the new line for the Southern Pacific leaves it at a point southeast of the smelter. It follows moderately close to the old track up to the crossing of the Santa Fe, where it is laid just as close to the old line as it is possible to have it and give room to grade the new line without disturbing the old. This is done to utilize, as far as possible, a heavy cut on the present line just south of the proposed crossing. Up to this point I ran a location line. This location can not be bettered.

Beyond the crossing the line is preliminary and a hasty one at that. In many places it can be much improved in location, both as regards the amount of grading and the curvature. The river crossing, while only some 150 feet downstream from the present crossing, is over 300 feet shorter than it. The old bridge can not be used, owing to the fact of its being so low, its west end being about 22 feet lower than the west end of the new bridge will be. Why this is so when the new location is 12 feet lower than the old at the crossing of the Santa Fe, only 1,800 feet distant, is that the old line is running down on a maximum grade west between these two points, while the new one is running up. In the 2,000 feet west of the bridge comes the heaviest grading on the whole work, being a 45-foot cut and a 55-foot fill. There is no help for this; it must be taken.

This heavy fill shows four 24-inch pipes through it. The reason so many are shown is that the Mexican Government will, in all likelihood, take out their high line ditch with a tunnel through the ridge which makes the heavy cut west of the railroad, so that all the water they use would have to pass through the Southern Pacific bank.

From this point on it is only a matter of detail to fit the line onto the hillsides. While with one exception (the fill at station 65) I have based the estimate of cost on the preliminary profile, a careful location will undoubtedly lessen the amount of grading beyond station 38 of the preliminary about 10 per cent. Back of station 38 it can not be materially lessened. A location should connect with the Southern Pacific about 1,000 to 1,500 feet south of where this line closes, laying the whole line beyond station 150 downhill. As the country here is sand hills, with a slope of from $2\frac{1}{4}$ to 4 per cent across the line (see pp. 6-9, Notebook No. 3), this can easily be done, thus saving some quarter of a mile of construction over the preliminary.

The new preliminary line is now 1,836 feet longer than the present Southern Pacific track. The location would save not over 200 feet, so that the new track will be about one-third of a mile longer than the old. To offset this increase in length the following are advantages over the present line: First, it cuts out two 10-degree curves, one of which is on a maximum east-bound grade. Second, it saves 23 feet of fall and the same amount of rise in the grade line. The elevation of the new line at the Santa Fe crossing is 3,750, and the lowest point in the present track is 3,727. This is a valuable gain. The third and most important advantage is, it reduces the east-bound gradient of the freight division from a 1 per cent compensated 0.02 degree of curvature to an eight-tenths per cent compensated 0.05 per degree. The lowest compensation now sanctioned by experts is 0.04 on a 10-degree curve; hence their east-bound gradients have been reduced $33\frac{1}{3}$ per cent, thus increasing the possible train load fully 20 per cent. This one item would pay for the heavy bank at preliminary station 35 in a few years.

The following is an estimate, by sections, of the amount of subgrade

work, taken from Profile No. 6, and of required track material. Where cuts are of classified material and the adjacent fills must be made from loose rock burrow, only the excess of the fills over the cuts is estimated:

Section.	Earth excavation.	Loose rock excavation.	Solid rock excavation.	Earth embankment.	Earth burrow.	Pile bridge.	Iron pipes.	
							18-inch.	24-inch.
	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
1.....	32,570		30,770					90
2*.....		10,510	51,810		45,000	400	85	420
3.....			30,025		40,000		175	240
4.....	2,697		1,986	24,232	2,000	150	90	58
5.....	9,963		8,000	22,488		135		
6.....	2,360			11,434		15		84
Total.....	47,590	10,510	122,591	58,154	87,000	700	350	892

*Section No. 2 has also 500 feet of Howe truss bridge.

Track material for 5.7 miles of tracks: 15,000 cross-ties (2,640 per mile), 546 long tons 60-pound steel rails (95 tons per mile), 33,000 pounds, 220 kegs of 150 pounds each, of spikes (38 kegs per mile), 64,000 pounds angle bars (2 pairs every 30 feet, 32 pounds per pair), 5,000 pounds bolts (weight 61 pounds per hundred), 130 telegraph poles (28 per mile but only 220 stations), 5,000 pounds telegraph wires (2 wires for 220 stations).

The prices used for subgrade work and laying track are based on the cost of labor here, and are near what the work can be done for. The price per foot per mile trestle and Howe truss are based on an approximate estimate of the amount of material and the cost of same in place in a completed structure. If error is found either way the prices will probably be found too high. The prices of track material, drainpipe, and telegraph wire are based on the Chicago market, and a 1 cent per ton per mile freight rate.

Estimate cost of rebuilding Southern Pacific Railroad.

47,590 cubic yards of earth excavation, at 10 cents	\$4,759
10,510 cubic yards of loose rock excavation, at 30 cents	3,153
122,590 cubic yards of solid rock excavation, at 70 cents	85,813
58,150 cubic yards of earth embankment, at 10 cents	5,815
87,000 cubic yards of loose rock burrow, at 30 cents	26,100
700 linear feet pile bridge, at \$10	7,000
500 linear feet Howe truss bridge, at \$65	32,500
350 linear feet 18-inch iron pipes (weight, 120 pounds per foot), at \$3.50 ...	1,225
892 linear feet 24-inch iron pipes (weight, 192 pounds per foot), at \$5.25 ...	4,688

Total cost of subgrade 171,048

15,000 cross-ties, at 50 cents	7,500
546 long tons 60-pound steel rails, at \$48.50	26,481
33,000 pounds (220 kegs, 150 pounds each) spikes, at 2.8 cents	924
64,000 pounds angle bars, at 2.7 cents	1,728
5,000 pounds bolts, at 3.4 cents	170
130 telegraph poles, at \$3	390
5,000 pounds of wire, at 4 cents	200
6 miles laying and surfacing track, at \$400	2,400
5 miles of telegraph line to build, at \$50	250
1 siding one-half mile long, to grade and lay	1,000

Cost of track 41,048

Total cost	212,091
Deduct scrap value of 300 tons of old steel, at \$25	7,500

Net cost of rebuilding Southern Pacific..... 204,591

While in this estimate is included the cost of track material and laying, the Southern Pacific people, on account of the advantage this work will bring them, both in bettering their line and developing the country, ought, and undoubtedly will, at least put the track on the subgrade at their own expense, and possibly they will do a part of the subgrade work as well. They could well afford to assume the whole expense of the reconstruction. The reduction in operating expenses and increased traffic which this scheme, if carried out, will give them would render it a paying investment.

XV. REMOVAL OF THE SANTA FE.

That portion of the Atchison, Topeka and Santa Fe line into this place, which is in Texas, is incorporated as the El Paso and Rio Grande Railroad, but is popularly known as the Santa Fe, and is called so in this report. This track enters the lake near its upper end and traverses its whole length. For the greater part of this distance the road is in the river bottom on alluvium underlaid by quicksand. Reference to the map will show that from a point 2 miles above Canutillo to point 2 miles below that place, or for 4 miles, a new channel is forming in close proximity to the track; indeed, for over a mile and a half it is now close up to the bank, necessitating heavy riprapping to keep the track from going out. The experience of the Santa Fe people in the valley of the Rio Grande has taught them that the first heavy flood in the river is likely to entirely undermine a good portion if not all this track and sweep it entirely away; it is therefore, so far as a permanent track is concerned, much to their advantage to get out of the river bottom.

Taking up the new line in detail, the west half of the present Santa Fe yard in El Paso is on their maximum north-bound grade of five-tenths percent, as is the track also as far north as the north end of the curve at the south end of Fort Bliss Military Reservation. The track is then practically level for the next 4 or 5 miles. While I have at hand no profile of the line between El Paso and Anthony, I don't think that there is any maximum grade between the military post and Anthony. The new line is a location up to Station 248, and a hasty preliminary beyond. Starting from the curve at the south end of the military post, it is supported up along the edge of the mesa on a maximum grade in order to reach the highest possible elevation at the point where this line goes over the Southern Pacific. From Station 126 to Station 146 it may seem best to go around the bluff instead of through it as this line does, but by going through it some 40 degrees of curvature was saved, while only about 140 feet distance was lost, thus throwing the grade line 1.7 feet higher at the same point at Station 146. While the cut is more, the fill is much less on this line than it would be outside.

From station 155 to 180 the line has not sufficient support, and should be laid into the hill a little harder. If handled properly, but little distance need be lost in laying this up the hill.

From Station 190 to 230 the line is probably nearly right. It might be wise to try laying the long curve from Station 190 to 210 about 200 feet west, or down the hill. I think, however, that the fills would be very largely increased, while the cut would be lessened but little.

From Station 230 to 248 the line should be laid uphill and a longer tangent worked in at Station 235. This country sets up edgewise, and the line must be handled with great care or it will be buried out of sight. Everything touched is solid rock.

From Station 250 to 330 the quantities show that the line is too far down the hill; more support can be easily obtained, as from 255 on the general slope of the surface is about 4 per cent, rising to the eastward.

This preliminary is very hastily run, and is not by any means the best line that can be gotten.

Before the final location is made, one or two more lines should be run—one obtaining more support between stations 250 and 330 and another being on much lower ground—say 20 or 25 feet lower at Station 520. These changes would, I am quite sure, much improve the line and lessen the quantities very materially. As it is, a line can be laid near the preliminary already run, which will lessen the quantities 10 per cent as far north as Station 600.

The length of this line between the fort and the State line, at Anthony, is 152 feet longer than the present track. This and possibly more would be saved on location, so that it is safe to say that the new line would be practically of the same length as the present track. The new line, when located, will have about 656 degrees of curvature, against 402 on the present line, or an increase of 60 per cent. This is a good deal to ask the Santa Fe people to stand, but is the best that can be done. The maximum gradients are more freely used on this than on the old line. By breaking into three or four pieces the long tangent from Station 600 to State line quite a portion of the maximum south-bound grade can be eliminated, and it may be best to do this.

The work—i. e., cuts, fills, and bridges—is much heavier on this line than on the present track, making it a more expensive line to maintain and operate. But remembering the fact that by this change they will remove their track from that treacherous river bottom and the fact that the building of this reservoir will so largely develop the country here, and thus increase their traffic and earnings, they ought to and likely will be willing to consent to the change, and even to furnish and lay the track at their own expense.

The following is an estimate by sections of the amount of subgrade work and of required track material. As on the Southern Pacific, where the cuts are of classified material and the adjacent fills must be made of loose rock borrow, only the excess of the fills over the cuts is estimated.

The prices used in figuring the cost are the same as those used for the Southern Pacific work.

Section.	Excavation.			Earth embankment.	Borrow, loose rock.	Pile bridge.	Iron pipes.	
	Earth.	Looser.	Solid rock.				18-inch.	24-inch.
	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>
1		8,485	18,455		6,280		295	105
2	5,560	14,720	5,240	8,000	35,290	405	90	105
3		17,655	61,120		2,150	165	225	290
4		18,145	21,450		102,265			545
5		16,550	16,490		65,340	75	70	350
6	6,770	28,540	21,070		12,445	255		
7	15,830	14,540		38,050		315		65
8	17,270	13,460		41,640		285		
9	18,425	14,770		48,015		240	75	
10		7,000		33,165	23,475	360		
11	8,480			14,410	7,000	120		
12	1,950			16,510		180		
13	4,290			7,560		75		
14	2,330			5,725		120		
15				6,710		45		
16	1,340			11,040		150		
17				7,830		75		
18	1,740			6,105		45		
Total	90,985	146,865	143,825	239,260	254,225	2,910	755	1,460

Track material for 18.2 miles of track: 48,100 cross-ties (2,640 ties per mile), 1,730 long tons of 60-pound steel rails (95 tons per mile), 103,500 pounds (690 kegs) of spikes (38 kegs per mile), 205,400 pounds angle bars (2 pairs every 30 feet, weighing 38 pounds per pair), 15,700 pounds bolts (61 pounds per 100 bolts and nuts), 500 telegraph poles (28 per mile for about 17 miles), 20,000 pounds telegraph wire (2 wires for a distance of 88,000 feet).

Cost of rebuilding 18.2 miles of Santa Fe track.

90,985 cubic yards earth excavation, at 10 cents	\$9,098.50
146,865 cubic yards loose-rock excavation, at 30 cents	44,059.50
143,825 cubic yards solid-rock excavation, at 70 cents	100,677.50
239,260 cubic yards earth embankment, at 10 cents	23,926.00
254,225 cubic yards loose-rock borrow, at \$30	76,267.50
2,910 linear feet pile bridge, at \$10	29,100.00
755 linear feet 18-inch iron drain pipe, at \$3.50	2,642.50
1,460 linear feet 24-inch iron drain pipe, at \$5.25	7,665.00
Total cost of subgrade	293,436.50
48,100 cross-ties, at 50 cents	24,050.00
1,730 long tons 60-pound steel rails, at \$48.50	83,905.00
103,500 spikes, at 2.8 cents	2,898.00
205,400 pounds angle bars, at 2.7 cents	5,545.80
15,700 pounds bolts, at 3.4 cents	533.80
500 telegraph poles, at \$3	1,500.00
20,000 pounds telegraph wire, at 4 cents	800.00
18.2 miles of track laying and surfacing, at \$400	7,280.00
17 miles telegraph line, at \$50	850.00
1 mile of siding grade and lay	2,000.00
Total cost of track	129,362.60
Total	422,799.10
Deduct 1,500 tons of old steel, at \$25	37,500.00
Net cost of moving Santa Fe	385,299.10

On neither the Santa Fe nor the Southern Pacific will any depot buildings have to be abandoned, hence none will have to be built.

XVI. SUMMARY COST.

Cost of site for reservoir	\$69,100.00
Cost of dam	304,369.00
Cost of moving Southern Pacific Railroad	204,591.00
Cost of moving Santa Fe	385,299.10
Total	963,359.10
Add 10 per cent for administration and incidentals	96,335.91
Grand total	1,059,695.01

It is customary to add to preliminary estimates of work of this kind 15 per cent. If it were an estimate of cost of the dam alone, that amount would be added. But nearly two-thirds of the total cost is for moving the railroads, and there is almost no uncertainty about the estimate for that work. So that 10 per cent is, in my judgment, enough to add.

If the railroad companies will furnish and lay their own track, it will reduce this total to \$921,751.05.

In conclusion, I will say that the work, from an engineering standpoint, is perfectly feasible, and that the results will be commensurate with the cost.

Yours, truly,

W. W. FOLLETT,
Civil Engineer.

Maj. ANSON MILLS,
United States Army.

APPENDIX A.

[House Document No. 125, Fifty-fourth Congress, first session.]

INTERNATIONAL DAM IN RIO GRANDE RIVER, NEAR EL PASO, TEX.

Mr. Hitt presented the following letter from Col. Anson Mills, Colonel Third Cavalry, to the Secretary of State, dated December 8, 1888:

EBBITT HOUSE,

Washington, D. C., December 10, 1888.

SIR: Agreeable to promise at our interview this a. m., I have the honor to submit the following general outline of my projected scheme for an international dam and water storage in the Rio Grande River, near El Paso, Tex., for the control of the annual floods and the preservation of the national boundary to the Gulf, and for other purposes.

The Rio Grande, 1,800 miles long, rises from an unusual number of tributaries in the very high altitudes of southern Colorado and northern New Mexico, where the rain and snow fall is extraordinary, and the ice formed therefrom in the long winter enormous. As it flows southward the precipitation gradually decreases for 600 miles, when the Mexican boundary is reached at El Paso, Tex., where there is neither snow nor ice, and but 8 inches annual rainfall; from thence 1,200 miles south to the Gulf of Mexico the rainfall is only sufficient to compensate for the loss by evaporation (which latter is very great), and for these reasons the river has but few tributaries and no increase of flow below El Paso.

The annual floods, caused by the melting of snow and ice in the mountains, take place in May and last for about seventy-five days, during which period the average flow may be estimated at 200 yards in width by 2 yards in depth, with a velocity of 5 miles per hour, although in recurring periods of about seven years it is much greater. During the remaining two hundred and ninety days of the year the average flow is perhaps not over 30 yards wide by 1 yard deep, with the same velocity; and in the same recurring periods, in the intervals between the high tides, the river goes dry for months, as it is at this time—or at least has no current, with not enough water in the pools to float the fish.

There is at present popular opinion that this want of water comes from its diversion by the numerous irrigating canals lately taken out in Colorado and New Mexico, and while it is problematical what effect this may have, if any, I am of the opinion that most of this water returns to the stream again, either through the atmosphere, by evaporation and precipitation, or by the earth, through overflow and drainage, as from personal observation I know that these seasons of flood and drought were of about the same character thirty years ago.

After leaving the mountains the river passes through low valleys of bottom lands from 1 to 12 miles wide and from 4 to 8 feet above low-water level, of a light, sandy alluvium formed during annual overflows by sedimentary deposits from silt, which the water always carries in a greater or less degree.

In meandering along the Texan bank of the river as a land surveyor, from the New Mexican line to a point below Fort Quitman, in 1858, 1859, and 1860, I observed that the deposit was from one-half inch to 3 inches annually, that during the floods the bed of the river was constantly

changing by erosion and deposit, and that in regular cycles it shifted from one of its firm rocky or clay banks to the other, as the deposits had raised the side of the valley through which it then flowed above the level of the opposite side. Generally this change took place slowly, by erosion and deposit of matter entirely in suspension; but frequently hundreds of acres would be passed in a single day by a cut-off in a bend of one channel, and sometimes the bed would suddenly change from one firm bank to the other, a distance of perhaps 20 miles in length by 6 in width. For instance, when surveying "El Canutillo," a valley a short distance above El Paso, the river was moving westward, and about the middle of the valley, which was some 6 miles wide. Old Mexicans who had lived in the vicinity informed me that in 1821 the river ran close along the eastern bluff, where its bed was plainly to be seen, as was also a less plainly outlined bed along the bluffs on the opposite side, where the river flows at this date, and gives evidence of returning abruptly to the eastern bluffs again at the next greatest high tide, to its old channel along the bed of the track of the Santa Fe Railroad.

In another case, more recent and extensive, in the great valley below El Paso, some 12 miles in width and 20 miles long, the river, as was plainly evident at the time I was surveying the land, had made a sudden change from the bluffs on the eastern or Texan side to the western or Mexican side of the valley.

Mexicans who had been residents continuously in that vicinity informed me that this change took place in 1842.

Again, in 1884, in this vicinity, the river swept suddenly from the Mexican side, crossed the Southern Pacific Railroad, and destroyed both track and bed for a distance of 15 miles, stopping traffic for a period of three months and causing the removal of the road to hills above the valley.

Though these are the most extensive changes that came within my personal observation, similar ones are being made annually, from El Paso to the Gulf, which not only prevent the settlement and development of such of the lands as are sufficiently above the overflow (were the banks and boundaries secure), but by reason of the river being the national boundary between the United States and Mexico for over 1,200 miles, cause fatal embarrassments to the citizens and officials of both Republics in fixing boundaries and titles to lands, in preventing smuggling, collecting customs, and in the legal punishment of all crimes and misdemeanors committed near the supposed boundary line, it being easy at almost any point in its great length to produce evidence sufficient to raise a reasonable doubt in the minds of the jurors as to which side of the line the arrest was made or the act committed.

At the last session of Congress the House passed a joint resolution (No. 112) requesting the President to appoint a commission, in conjunction with a similar one from the Republic of Mexico, to consider the matter above referred to. While surveying these lands in 1858, and prospecting for a crossing of the Rio Grande for the Memphis, El Paso and Pacific Railroad, which was then projected—and in fact in course of construction—I examined the pass about three miles above the present city of El Paso, and discovered that it had solid rock bed and walls, the latter but about 400 feet apart, and that the valley above which came close down to the spur of the Rocky Mountains which crossed the river and formed the pass was from 4 to 8 miles wide, with a fall of about 4 feet to the mile, so that it would be an easy matter to build a dam in this pass and create an immense lake.

The water coming through this pass for ages has deposited at its lower end a great mass of rocks, over which is formed rapids with about 12 feet fall, and the aborigines of prehistoric ages made use of this to carry the water on to the lands below, no one knows how long ago, but it is known that the Mexicans have used it for two hundred years under most disadvantageous and unsatisfactory circumstances.

I have witnessed, each succeeding year, hundreds of Mexicans piling loose stones on the top of this drift of rocks to raise the level to that carried away by the floods of the preceding year; and it has been estimated by a federal engineer sent from the City of Mexico, that, had the labor thus expended been reduced to silver, the dam could have been built of the solid metal. The difficulty has been and always will be that there is neither bed rock nor solid earth in the bottom or banks, each being composed of quicksand.

In other places in the valley temporary willow dams 1 or 2 feet high are made at convenient places, and the water carried several miles below on to the lands that are above the usual overflow; but these dams are carried away annually and have to be rebuilt, and frequently the river bed moves miles away from the mouth of the ditch or acequia, rendering it useless; but even if these difficulties in carrying the water from the bed of the river to the lands are overcome in the usual manner, it is evident that by reason of a great overflow, say every seventh year, and a dry river in a like period, no system of irrigation for the Rio Grande can prove satisfactory that does not embrace a grand storage system sufficient both to restrain, to a great extent at least, the tidal flow and maintain a constant annual flow, especially since the great emigration and settlement in its valley is constantly doubling the demand for water.

Being on leave of absence in the city of El Paso recently, where I was a citizen before the war, having surveyed the first plat of the town and being well known to most of its citizens, I was invited by the city council to submit to it a plan for water supply and irrigation that would overcome the difficulties above referred to.

It at once occurred to me that as the Rio Grande was the joint property of the two nations, and especially as the Mexicans had used its waters since time when "the memory of man runneth not to the contrary," that any plan to be acceptable and satisfactory must be international in character, and the works, both before and after completion, under the joint federal control of the two nations, the more so as riparian rights in this country, so far as regards irrigation, are not well defined by law, and could be best brought about in this instance by treaty stipulations between the two countries.

The matter of restraining the tidal flow by storing the water, and thus protect the constantly changing national boundary, occurred to me—if it could be introduced into the project—as likely to secure encouragement and substantial aid by liberal appropriations in money from both Governments.

And further, that El Paso, being now a city of over 11,000 population, and having every prospect of being a large manufacturing city at no distant day—there being no place within 500 miles likely to compete with it—the subject of water power ought also to enter into the problem, which of necessity is of such vast proportions as to require all incidental aid possible to attach to it to insure its success.

It will be apparent, from what has been written, that the Rio Grande is one of the first magnitude, not only in length and breadth, but for

short annual periods in devastating flow of waters, and that its general characteristics, as compared with other rivers with reference to irrigation, are so abnormal as to require different or more heroic treatment.

I therefore projected a scheme which may be briefly outlined as follows:

To build a strong dam of stones and cement—say 60 feet high—in the pass before referred to, and by submerging about 60,000 acres of land now subject to overflow and of little comparative value, create a vast lake 15 miles long by 7 wide, with a probable storage capacity of 4,000,000,000 cubic yards of water; place gates on each side of the river in the dam at the 50-foot level for wasteweirs and irrigating canals to supply each side of the river and keep up a flow in its bed which would bring the water in the canals 70 feet above the streets in the cities of El Paso and Juarez, respectively.

The gates at the 50-foot level would give an available reserve of water of 10 feet over the entire surface of the lake—over 2,000,000,000 cubic yards—which would be exhausted during the long season of little flow for the purposes of irrigation and other needs, as well as maintaining a constant stream in the river beds so arranged as to exhaust the reserve about the period of annual flood, which would be checked and held in reserve for the next season of little flow, and in this manner produce a comparatively constant and unvarying flow of water for each entire year below the dam, redeeming many times the number of acres submerged above in the lake from overflow below, and fixing permanently the national boundary, the banks of the river, as well as the boundaries and titles to private lands, and making it an easy matter to collect duties and prevent smuggling, detect crimes and misdemeanors generally, arrest and punish criminals, as it is along other national boundaries.

The assumed flow given for the seventy-five days of high water will give about 6,500,000,000 cubic yards, and that for the remaining two hundred and ninety days 1,500,000,000, making an aggregate annual flow of 8,000,000,000 cubic yards. If we allow 2,000,000,000 of this for loss by evaporation and other wastes, which former in this dry atmosphere is very great, perhaps 80 inches, we have 6,000,000,000 cubic yards remaining. This should be divided into three equal parts, one for each side of the river, for irrigation and other needs, and the third for overflow, through water motors, to furnish power to the future manufacturing cities on each side and to maintain a constant flow in the river below to the Gulf, as would no doubt be demanded by the people there as their right ere they would permit the scheme to be carried out.

The 2,000,000,000 cubic yards falling a distance of 50 feet over the dam, estimating the weight of a cubic yard of water at 500 pounds, and 1 horsepower the energy required to lift 33,000 pounds 1 foot in a minute, would expend energy equal to over 10,000 horsepower for eight hours every day in the year, and produce a constant stream in the bed of the river 26 yards wide by 1 foot deep, running with a velocity of 5 miles per hour, to say nothing of the probability that the greater part of the other two-thirds would find its way again to the river bed through the earth and air, the whole flowing in a steady, continuous stream to the mouth of the river, to be used as required at any season of the year, instead of, as is now the case, three-fourths of the entire mass of the annual flow going rapidly to the Gulf in the short period of seventy-five days untaxed.

Estimating the amount of water required for annual irrigation at 20 inches, the water reserved for that purpose would be sufficient for 100,000 acres on each side of the river—all that could be reclaimed from the desert for 100 miles below.

To carry out this project I recommended to the people on each side of the Rio Grande that they petition to the executive authority of their respective nations for the creation of a joint commission to draw up the necessary treaty stipulations to protect the work and the rights of all interested in them, the fundamental feature of which should certainly be that each nation should have the right to divert no more than one-third of the flow at any period, and that one-third of the flow should be maintained in the bed of the river, and that this international commission have charge and control of the work after completion as well as during construction.

That the legislative authorities of the two nations be asked to appropriate, after complete investigations and estimates have been made, money sufficient to complete the work, probably \$100,000 for the dam proper, \$100,000 for the condemnation of the 50,000 acres of land to be submerged, and \$100,000 for the removal of some 15 miles of the road-bed of the Atchison, Topeka and Santa Fe Railroad to bluffs above the old bed of the river, where the track now lies, subject to annual damage, and sooner or later total destruction, unless removed.

It will also be apparent that the waters of this great lake will be clear and fresh, the silt held in suspension in the current of the river being precipitated as soon as it enters the still water of the lake, doing away with the great trouble and expense now necessary in keeping the canals and ditches cleansed of sedimentary deposits, and a further great benefit derived from using water reduced in temperature by exposure for months in a warm climate far below that used in the early spring, which comes in three days from snow and ice and is immediately applied to the young and tender sprouting plants, chilling and checking their growth.

I know of no point in the Rio Grande between Albuquerque and the Gulf of Mexico where nature has provided both the natural basin and rim for a lake of such great dimensions, for, indeed, it can be made 100 feet deep if desired, and it may be questioned whether a depth of 60 feet, with 10 feet reserve to draw from, will afford sufficient storage to control perfectly the tide at its highest flow.

This project was well received by the people and has been earnestly discussed in the public press of the locality ever since with general approbation and a disposition to endeavor to carry it out as quickly as possible. The only question exciting any general distrust is that the sedimentary deposit in the lake, it is held by some, will shorten the life of the reservoir by filling the lake at such an early period as to render the scheme of doubtful expediency, and opinions differ very widely upon this subject, which is, indeed, a problematical one, and can only be determined, even approximately, by actual measurements of a great majority of the annual flow, for the quantity of sediment changes with flow and season.

That the bed of the river will eventually be filled, of course, is only a matter of time, but whether in fifteen or one hundred and fifty years can only be ascertained by prolonged, actual measurements; but even if filled in the near future it seems to me that the difficulty may be overcome by raising the dam, unless, indeed, that should be required too often.

The matter has already been referred to Major Powell, chief of the Geological Survey, who has sent Capt. Clarence Dutton, of his Department, to El Paso to investigate and report on the feasibility of the scheme; but as the initial steps, should it be pronounced feasible, must come from your Department in the nature of international treaty stipulations, I have thought it proper to thus early acquaint you with the grand project.

I beg to refer you to Hon. Mr. Lanham, member of Congress from Texas, who is acquainted with me personally and my projected scheme.

ANSON MILLS,
*Major Tenth Cavalry, Brevet Lieutenant-Colonel,
United States Army.*

The SECRETARY OF STATE,
Washington, D. C.

APPENDIX B.

[Extract from Eleventh Annual Report Geological Survey, Part II, pp. 52-57.]

RIO GRANDE BASIN.

The Rio Grande rises in the mountains of southern Colorado, flows easterly into the great San Luis Valley, then turns southerly into New Mexico, traversing that Territory from north to south. It forms for a few miles the boundary between New Mexico and Texas, and then is the dividing line between Texas and the Republic of Mexico. From Del Norte to the Pecos River in Texas its waters are diverted by hundreds of ditches. Some of these are of great antiquity, dating back to the Spanish conquest, and perhaps earlier. Communities and towns in Colorado, New Mexico, Texas, and in the Mexican Republic are dependent for their life upon the waters of this river, and anything that affects the flow is of vital importance to thousands of people.

The diversions of water have proceeded from the south upstream, the Mexicans gradually extending their settlements and taking out small tortuous ditches along the bottom lands. Within the last few years, however, following upon the development of mining in Colorado, agriculture has been found very profitable in the San Luis Valley, and canals as large, if not larger, than those of any other locality in the United States have been built. The enormous diversions of water in this valley and the unusually dry seasons have resulted in a diminished flow in the river below, so that for two summers the bed of the stream has been dry below San Marcial. As a consequence, loss of crops and great suffering have ensued among the farmers who have been accustomed to depend upon the river water.

Such a succession of dry years is, of course, likely to occur again, and even if the drought is not so severe, with the continual diversion of water in Colorado and upper New Mexico there must finally come a time when scarcity of water will be the rule in the lower part of the Territory and in Texas and Mexico. The water-storage problem, therefore, is of momentous importance, and a study of all the facts bearing upon hydrography is demanded at once.

The investigation of the water supply of the Rio Grande basin was

begun by the establishment of river-gauging stations at Del Norte, Colo., at Embudo, N. Mex., and at El Paso, Tex. The tables of monthly discharges for these three places will give the main facts of the water measurements.

The total amount of water which passed Del Norte during the year ending June 30, 1890, was 0.23 cubic miles, or an average of 1,090 second-feet for the twelve months. This amount, if distributed uniformly over the drainage basin above the gauging station, would cover the ground to a depth of $10\frac{1}{2}$ inches. There are but few small ditches taken out above Del Norte, and no large bodies of level land, so that the results obtained there may be considered as the total discharge unmodified by artificial means.

The distance from Del Norte to Embudo by river, omitting the tortuous meanders, is about 130 miles. During this course the river receives many small tributaries, as will be seen by a glance at a map. Many of these, however, at ordinary stages lose all their water by diversion to irrigating ditches, or by its sinking into the sandy beds long before it can reach the trunk stream. Only in times of flood do they actually contribute to the discharge of the river.

At Embudo the total discharge (see Pl. LXXIII) for the year was 0.26 cubic mile, or a daily mean of 1,240 second-feet, only 150 second-feet more than at Del Norte. Considering any such point as Embudo, it becomes a difficult matter to compute the drainage area which actually contributes to the flow. As just stated, the rain which falls upon vast areas included in the drainage basin seldom or never reaches the river. In the northern portion of the San Luis Valley the streams flow into the San Luis lakes, from which there is no outlet. All this part of the drainage basin can therefore be excluded at once as not contributing to the Rio Grande. Farther south, however, the difficulty of discriminating between the portions of the basin which do or do not supply water becomes greater, and it is impossible to decide what particular areas should be considered as tributary to the stream. The total area of the basin above Embudo, excluding the drainage into the San Luis lakes, is 7,000 square miles. Distributing the total flow for the year over this area, the depth would be 2.4 inches. The excess of the discharge of Embudo above that of Del Norte, if distributed over the drainage included between Del Norte and Embudo, would cover the ground to a depth of only 0.36 inch. It should be noted that in this comparison no account is taken of the results of the canal diversions.

El Paso, according to the survey made by army engineers,¹ is about 517 miles below Embudo, following the course of the river. The slope ranges from 4 to 52 feet per mile. The principal tributaries are the Chama, Jemez, and Puerco, all coming in from the west. As is shown by the diagram of discharge and monthly averages, the water received from tributaries below Embudo is not sufficient to supply the loss by evaporation and diversion.

The total flow for the year at El Paso was 0.22. The capacity of the reservoir is $0.16\frac{1}{2}$ of a cubic mile, averaging 1,050 second-feet, or 190 second-feet less than at Embudo. From the latter part of July to the middle of December the water ceased flowing, the bed being dry except in deeper pools.

¹ Annual Report Chief of Engineers U. S. A., 1889, p. 1571.

The following comparison of the mean daily discharge in second-feet at Embudo and El Paso gives some facts of interest:

Mean daily discharge of Rio Grande in second-feet.

	1889.						1890.		
	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Janr.	Feb.	Mar.
Embudo.....	471	206	212	283	366	542	437	553	682
El Paso.....	237	0	0	0	0	70	196	290	424
Difference.....	234	206	212	283	366	472	241	263	258

It is evident that from 300 to 400 second-feet must pass Embudo, in addition to the ordinary discharge of the tributaries, before any water can reach El Paso.

SEDIMENT.

The sediment observations were begun at Embudo, N. Mex., January 15, 1899, and were continued for three months. The apparatus was then shipped to El Paso, where samples were first taken on July 10, the work being continued from that time through the following fiscal year. In these measurements the object in view was not so much the obtaining of results of scientific accuracy as the procuring of certain data for engineering purposes, viz, the approximate proportion of silt carried by the river water at various stages and seasons. The equipment for doing this work was necessarily simple and rather crude, owing to the original requirements that these measurements should be made in camp and that all parts of the apparatus should be strong and portable.

In the previous annual report¹ mention is made of the conclusions reached as to the most convenient way of taking samples and drying filtrates. These methods have been in use during the year and give quite satisfactory results. With the sediment trap, a horizontal cylinder with vertical sliding doors at each end, water was taken at about one-half foot below the surface for the top sample and at about one-half foot above the bottom for the bottom sample. These were then placed in covered jars and allowed to settle for three or four days. At the end of the time the clear water was carefully drawn off with a glass siphon and the sediment washed out upon filter paper by means of a jet of clear water. The filter papers were previously dried and weighed, and after receiving the sediment were again put into the drying oven. This was kept at a temperature of from 50° to 60° C. by an oil stove. After twenty-four hours' drying the papers containing the sediment were carefully weighed, due precautions being taken against increase of weight by absorption of moisture from the air.

On the diagram, Pl. LXXIV, are given the data from the El Paso station, showing graphically the number, date, and agreement or lack of agreement of the observations. One, two, or three samples were taken on the same day. As above stated, each sample was, in general, made up of portions taken from near the surface and bottom, being intended to represent the average sediment of that vertical plane.

¹Tenth Annual Report U. S. Geol. Surv., Part II, Irrigation, p. 85.

The river at that point is 220 to 230 feet wide. The samples were taken on this section in the center, and usually 30 to 60 feet from either shore. On the diagram the parts by weight are given on a vertical scale of 100,000. The horizontal line marked 1,000 represents a thousand parts in 100,000, or 1 per cent, and the 2,000 line 2 per cent by weight. It will be noticed that the greatest divergencies of observations made on the same day are those at the time that the per cent increases suddenly, and that as the sediment falls the observations come closer together. This is what might be expected from the nature of the case, as high ratio of sediment means an increase of the larger, coarser particles, whose distribution is probably far less uniform than that of the finest silt.

In addition to the points marking the individual observations, a broken line is drawn connecting the mean of the observations for each day, or the single observation when there is but one. This line serves merely as a guide line for the eye, and of course can have no further value. Comparing this sediment diagram with that for discharge, it is seen that during the low water of the winter the sediment follows, in a general way, the discharge, an increase of discharge being accompanied by an increase of percentage of sediment. In other words, the small storms bring down muddy water. This is especially noticeable on March 15.

After the main flood of the year has set in, however, and the earlier storm waters have presumably washed out the silt most easily moved, the percentage drops off rapidly by dilution, although the actual amount in suspension is far greater than before, as shown by the table below. Again, as the flood decreases the minor disturbances following on its decline give an immense increase in ratio of sediment, especially noticeable in the last week in June, 1898.

The river bed being dry from the latter part of August to the middle of December, no observations, of course, appear. In December, however, the first water coming down the dusty channel might properly be termed fluid mud; the determinations therefore run very high, as shown on the diagram at the extreme right.

In order to express in a few figures the results shown in the diagram, the following table has been constructed, making several assumptions which may or may not be true. It is assumed that the mean of the determinations for a month is the average sediment for that month. This is given under the column headed "Sediment ratios." The averages of the daily discharges in second-feet for the same month are then taken. In the next column is given the weight of the water making up this number of second-feet. Multiplying this rate by the ratio for that month gives the sediment in pounds per second passing the station. This is then multiplied by the number of seconds in the month, and the result is given in tons per month.

The total for the year ending June 30, 1890, is, in round numbers, 3,830,000 tons. This earth, at a weight of 100 pounds per cubic foot, would cover a square mile $2\frac{1}{4}$ feet in depth.

Silt in the Rio Grande at El Paso.

[Estimates by months.]

Month.	Sediment ratios.	Average discharge.	Weight of water.	Sediment per second.	Sediment per month.
1889.		<i>Sec. feet.</i>	<i>Pounds.</i>	<i>Pounds.</i>	<i>Tons.</i>
June.....	.00468	2,638	165,000	772.2	1,000,570
July.....	.00201	237	14,810	29.6	39,800
December.....	.00813	71	4,440	36.1	48,380
1890.					
January.....	.00295	196	12,250	36.2	48,500
February.....	.00362	290	18,130	65.5	79,200
March.....	.00613	424	26,500	162.6	217,700
April.....	.00585	2,190	136,900	794.6	1,029,800
May.....	.00347	5,771	360,680	1,248.5	1,671,700
June.....	.00196	4,404	275,250	539.5	699,200
July.....	.00131	854	53,375	70.0	93,730
August.....	.00710	734	45,875	325.7	436,100

APPENDIX C.

[Hearings before Select Committee on Irrigation, House of Representatives, Fifty-first Congress.]

IRRIGATION IN THE UNITED STATES.

COMMITTEE ON IRRIGATION,
Thursday, February 6, 1890.

The committee, having under consideration House bill No. 3924, this day met (Mr. Vandever in the chair) for the purpose of hearing statements in regard to the same.

Mr. LANHAM. It will be remembered by the gentlemen of the committee who were present at the first meeting after our organization that I brought to the attention of the committee a bill introduced by myself (H. R. 3924) relating to the "Irrigation of arid lands in the valley of the Rio Grande River, the construction of a dam across said river at or near El Paso, Tex., for the storage of its waste waters, and for other purposes." It was determined by the committee that we would endeavor to secure the presence of Major Mills, of the United States Army, who has been detailed at that point at the instance, I believe, of the Director of the Geological Survey to take observations with reference to the practicability and feasibility of the construction of this dam. Major Powell himself has been there and beheld for himself the situation. Major Mills has been acting under his directions, I believe, and I should like very much, as Major Mills is now present—and so is Major Powell—that we should have these gentlemen to give us what light they can upon this question this morning.

Major Mills is temporarily here; he has been detailed by the War Department to report and give his testimony touching this measure. Major Powell is with us at all times, and I think their concurrent testimony upon the question is important. If the committee would allow it, I would be glad to hear this question discussed this morning by these gentlemen in such order as may be desired by Major Powell. I would move, if it be in order, that we hear these gentlemen upon the question this morning.

Mr. HERBERT. In considering the statement of my friend from Texas, there are good reasons for hearing Major Mills now upon that topic, because he is here temporarily. I submit, after we do that, that it will

be perhaps better to go on logically with the general subject. The stenographer will take down the testimony of Major Mills. Major Powell, who is present to hear that testimony, could now make any statement necessary to bring out the evidence needed from Major Mills. I would therefore submit that Mr. Lanham should modify his motion so that we take up Major Mills and examine him, in order to avail ourselves of his temporary presence, and then we can take up the other testimony more logically and go into the whole question, because I understand that this particular bill is simply a branch of the general subject upon which we want to get information.

Mr. LANHAM. It is a rather independent measure, I would state to the gentleman from Alabama, and I would like to have the statement and observations of Major Powell, which will not take very long, upon this particular plan in connection with the statement that Major Mills may make.

The CHAIRMAN. What do I understand the proposition to be now?

Mr. LANHAM. That we hear those gentlemen upon House bill No. 3924.

The CHAIRMAN. Is that the pleasure of the committee?

Major POWELL. Mr. Chairman, I think if I should be heard in this matter fully it would take a good deal of time; but I think in five or ten minutes I can outline the subject so that Major Mills's explanation of specific facts of that region will be a little more readily understood, and at another meeting I could take up the whole subject in discussing the Rio Grande.

The CHAIRMAN. We will hear Major Powell, if it is the pleasure of the committee.

STATEMENT OF MAJ. J. W. POWELL, DIRECTOR OF THE GEOLOGICAL SURVEY.

Major Powell addressed the committee as follows:

Mr. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: The valley of the Rio Grande, which you see marked here [illustrating on map], is a great north and south valley, and irrigation has been practiced in that valley for two hundred years by the Spanish people coming from the old country and Mexico. Of late years the development of the country has caused the subject of irrigation to receive a great deal of attention, and the waters which were formerly used in the lower part of the valley by the Spanish people—Pueblos—of that country are gradually being taken away from them.

The Rio Grande heads in Colorado. Until of late years there has been practically no protection in that principal portion of the Rio Grande, and the people of Colorado have by the construction of canals irrigated about 3,000,000 acres in the State of Colorado. The Rio Grande heads in that State, and a very large portion of its water supply comes from the great mountains of Colorado. Then as we come down, the people of New Mexico, in the region of the tributaries of the Rio Grande, are beginning to take out the waters of the tributaries of the Rio Grande. Then the people living below, at Albuquerque, Las-cruces, etc., are also beginning to take out canals, utilizing the water of the Rio Grande. Now, the point is this—that the taking out of the waters for irrigation in the regions above so diminishes the supply of water in the Rio Grande below as to cut off irrigation during the critical season of irrigation, and especially during seasons of exces-

sive drought, as the last two years have chanced to be in that region of country. Now the real point is that the waters which head in the mountains far to the north, and west, and east, fall above the waters which flow to the Rio Grande below, and are distributed in the vast sand plains, so that to irrigate 200,000 or 300,000 acres in the lower valleys of the Rio Grande, it would be necessary to protect those people, and that under the present conditions, without storage reservoirs, etc., it would be necessary to cut off some 4,000,000 or 5,000,000 acres above of waters which flow from the mountains and are lost in the sands. A river like the Rio Grande is like the Nile. Where the great tributaries of the Nile unite there is five or seven times as much water flowing into that river as there is at the mouth, because of the water lost in the sands and evaporated to the heavens.

The Rio Grande is a stream which illustrates that fact to a still greater degree. In ordinary seasons the waters above are from ten, twenty, fifty, one thousand times as much water up high in the river as down below in the river, because that evaporates on the way and is lost in the sands. Now, in late years, the cutting off of that water above for irrigating of vast areas comparatively has cut off the water they were using in the Messila Valley above El Paso and the El Paso Valley, and during the past year the supply has been cut off in two ways. It has been a dry season, and in a dry season the irrigation above has cut off waters from three to four hundred miles, and the river has been dry for—how long is it, Major?

Major MILLS. One hundred and thirty-seven days.

Major POWELL. The effect of that has been to cause the farming below El Paso, both on our side and on the side of the Republic of Mexico, to be destroyed. The winds are drifting sands here and there, and the farms, orchards, and vineyards are perishing. That has come to be a matter of international importance, so much so as to be looked into. That is the subject-matter of Mr. Mills's remarks to you.

Mr. LANHAM. I want to ask you a question. You were at El Paso in September?

Major POWELL. Yes, sir.

Mr. LANHAM. Did you examine the site of this proposed dam while there?

Major POWELL. I did.

Mr. LANHAM. What do you believe with reference to the feasibility and practicability of that plan?

Major POWELL. There is nothing difficult about it at all. It is perfectly feasible, and the chief difficulty will come—it is a pretty long story, but the chief difficulty is the vested rights. There are two railroads running through the valleys that have vested rights to the land which is to be flooded by this dam.

Mr. LANHAM. Did you have the testimony of Mexican people at Juarez, which is just across the river?

Major POWELL. No, sir; the committee did not take testimony in that direct way. They only took statements touching it.

Mr. LANHAM. Did not the committee take statements of Mexican officials?

Major POWELL. The Senatorial committee went across the line to look over the ground, and heard their speeches and statements in regard to the matter, but I believe they did not incorporate any portion of it in their testimony.

A MEMBER. Excuse me; there were several Mexicans before the committee from on our side.

Mr. LANHAM. These Mexican people, I have understood, have been deprived of water in consequence of these canals and ditches being taken out in the United States. That is the trouble with them.

Major POWELL. That is the state of facts.

Mr. LANHAM. You can give us full evidence upon this question hereafter?

Major POWELL. Yes, sir. It is quite a long and complicated question, which would take, perhaps, a session of the committee to give in full.

Mr. LANHAM. I trust the committee will now hear from Major Mills.

STATEMENT OF MAJ. ANSON MILLS.

Maj. Anson Mills, Tenth United States Cavalry, temporarily stationed at Fort Bliss, next addressed the committee. He said:

Mr. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: My first acquaintance with the country on the Rio Grande, which Major Powell has described, was in 1858, when I went there in the interest of the Memphis, El Paso and Pacific Railroad, which was to cross at that point. I then got into the occupation of surveying lands, and surveyed almost all the Texas lands from the new Mexican boundary down to 100 miles below fronting on that river, and in that way I became very well acquainted with its characteristics. I lived there four years prior to the war. Since the war I have served in that locality and have been acquainted with the river ever since. About two years ago, while on leave of absence at El Paso, I was requested by some of my friends to project a remedy for the then decreasing water in the river, and the perishing of a great many farms, trees, orchards, and vineyards by the drought. I had explained previously to them about a natural basin for a lake above the pass.

El Paso is named after the pass in the mountains through which the river runs. Above that pass is the natural basin for a lake, and it is very easy to build a dam at that point and impound the water to almost any extent. You can make a lake there 50 miles long by building a dam high enough, and impound as much water in that way as the Rio Grande would furnish. I came on to Washington—

Mr. HERBERT. I would like to ask you a question there. What is the altitude of that proposed lake?

Major MILLS. The height of the lake?

Mr. HERBERT. No; the altitude from the sea.

Major MILLS. It is about 3,700 feet.

Mr. HERBERT. Would not the water evaporate more rapidly at that altitude?

Major MILLS. Yes, sir; I will give you my observations on that subsequently.

Mr. HERBERT. Then you will also speak of the bed of the lake and the material of which it is composed?

Major MILLS. Yes, sir; I have made a report and have it here with me. It is a pretty extended report and contains maps, etc.

Mr. HERBERT. I have not seen that.

Major MILLS. I came to Washington and had an interview with Major Powell, and he took quite an interest in the subject. He had

had the subject of water storage on his mind for some time before, and he recommended me to pursue investigations as far as practicable, and as it was an international question, he advised me to see the Secretary of State. I went to the Secretary of State and had a verbal interview with him, when he asked me to reduce my views to writing, and he afterwards printed it in a Government publication. Later on Major Powell induced the Secretary of War to detail me to duty at El Paso, under his instructions to make the necessary investigations to determine whether such a scheme was practicable. One of my principal instructions in regard to my duty there was to cultivate friendly investigations in the matter between the people of this side and the people of Mexico, so in case a dam should prove practicable I could find out whether the Mexican population would assent to it and would cooperate in it.

Mr. LANHAM. It will be observed by the committee—if you will allow the interruption—that this dam is proposed to rest one end on Mexican soil and the other on United States soil.

Major MILLS. Yes, sir. I think I had probably better go back and begin at a different point. At El Paso the river becomes the boundary line between the two nations, the Republic of Mexico and the United States. About 2 miles above El Paso, and below to the Gulf, of course, each country is supposed to have a joint interest in the waters of the river. These people, as stated by Major Powell, have had ditches for over two hundred years on both sides of the river, in Texas and in Mexico, but they have been clamorous of late years for their vested rights in the water as against the people in Colorado and New Mexico, and that has now raised an international question. Texas has also raised a question between the State of Texas and the Territory of Colorado about these waters. I am now investigating a question of this kind in the Messila Valley above El Paso, extending 60 miles to Fort Seldon. In that valley they have had ditches for one hundred years in operation under the ancient Mexican method. Lately Americans have come in there and proposed to take out ditches on a grander scale, and consequently more economically, and yet, in consequence of the scarcity of water, the holders of the old ditches, claiming prior rights, have protested against this. This is a question that has been before both the Secretary of War and the Secretary of the Interior, and the hearings, I believe, are to be had to-day before them, the Secretary of War having given a revocable license to the company at Las Cruces to take out a large ditch, and he did that, as he informed me, on ex parte representations. Now he has suspended the license and is hearing the question as to whether it shall be restored.

I mention this to show the controversies existing there. In the meantime the people of the El Paso Valley have protested to the Secretary against the regranting of that license and allowing a new ditch to be built. I believe this statement will give the gentlemen of the committee an understanding of some of the questions involved there.

The CHAIRMAN. In the construction of this dam at El Paso, and bringing the water back into the Messila Valley, how much land now cultivated would be flooded?

Major MILLS. Very little land in the lake part. There would probably be about 1,000 acres in cultivation of the 26,000 to be flooded by the lake. There has been perhaps 2,000, but mostly by Mexicans who live in jacals, and it is not of any great value.

Now, the middle third of the Rio Grande, from a point about Albuquerque to the Presidio del Norte, has no confluent that throw water into it to maintain its flow. The flow comes from Colorado and the head waters in the high mountains from the drifted snow on the mountains melted by rains in the spring. The river has confluent above and below these points which are living streams and furnish the flow, but have none intermediate.

Mr. LANHAM. This dry portion extends down the Presidio del Norte about 200 miles and the river is absolutely dry?

Major MILLS. Yes, sir; in 1888 the river was dry for sixty days during a portion of August, September, and part of October. Last year the river ceased to flow entirely about the 5th day of August, and did not commence its flow until December 20, one hundred and twenty-seven days.

Mr. LANHAM. How far did that extend above El Paso?

Major MILLS. To near Albuquerque.

Mr. LANHAM. How far in distance?

Major MILLS. About 200 miles.

Mr. LANHAM. It became dry for 200 miles above and how much below?

Major MILLS. Two hundred miles.

Mr. LANHAM. General Stanley estimates in his report to the War Department that there is about 500 miles in all.

Major MILLS. That would depend upon whether he takes the meandering line of the river or whether he takes a straight line.

The CHAIRMAN. After this long period of drought, during which the river ceases to flow, and there comes a flood, does the river remain in the same channel as it did before the drought commenced?

Major MILLS. I will come to that. The prime object in this project is to correct the boundary line between the United States and Mexico. I have maps here, and I will show you how this river changes. Within two months this river shifts its channel 4 to 5 miles, flooding the country so as to render the best bottom lands wholly valueless for cultivation, and it mixes up the boundary question between the United States and Mexico. There are tracts of thousands of acres now over which it is not positive which country has jurisdiction. This condition renders it very feasible to smuggle and to carry on thefts of horses from one country to the other, for a refuge for murderers and other criminals, who are a constant menace to the peace and good order of the people on both sides. It is a matter that must be remedied. There are two great troubles there; one is when the spring floods come, which begin about the first to the middle of April and last about three months. I have seen the Rio Grande when it appeared to be as large a stream as the Mississippi and to cover as much area. I have seen it flooding all over the whole country. This water, by the way, comes from the mountains in Colorado and from a part of New Mexico at seasons when they do not need irrigation. On account of the early frosts they are unable to plant there at that time, and these waters come unobstructed. Another difficulty is the dry season, when the people lose their crops. We have had two such seasons, and the indications are that this year will be dry.

Mr. HERBERT. What is the population from El Paso to Presidio del Norte on both sides?

Major MILLS. It is about 50,000, equally divided.

Mr. HERBERT. Is it not a very rich, productive valley?

Major MILLS. It is one of the richest and most productive valleys I have ever seen. I am pretty well acquainted with southern California, and I believe they can raise everything there except oranges that they can in southern California, and abundantly, provided they had the water, but these floods and droughts prevent it, because the floods destroy the value of about one-third of all the land in both valleys, the Messila and El Paso. There is of land that could be cultivated in the valley of the Messila about 100,000 acres, and on the Mexican side in El Paso Valley 100,000 acres, and on the Texas side 100,000 acres which could be cultivated if they had the water. When a dry season comes, like last year, most of the young vines and fruit trees perish, and if there should be a like drought the next year a greater proportion still, including the older ones, would perish.

Mr. PICKLER. This drought of last year was excessive.

Major MILLS. The heavy drought of last year is probably to be attributed to a great extent to the slight fall of snow during the winter and the light rains. In my investigations I procured the report of the chief engineer of Colorado of the year before last, and he claims that 331 ditches have been taken out of the Rio Grande and its tributaries in Colorado alone, and we understand they are still on the increase. Everywhere they are taking them out without any assurances that they are going to have water for them.

Mr. LANHAM. Have you any idea how many were taken out in New Mexico?

Major MILLS. Not nearly so many, because there are few tributaries in New Mexico that carry living waters. They are principally taken from the Rio Grande in New Mexico, but in Colorado a large portion are taken out from the tributaries. There are many ditches taken out there and many projected; one grand one of 40 feet width above Albuquerque, now in course of construction; and this one I am reporting on, in the Las Cruces Valley, is also about 40 feet wide, and it is proposed to take the water during August, September, and October to irrigate; and this is objected to by the people of the valleys below who claim prior vested rights.

Mr. HERBERT. Let me ask you a question on that point. You were in that country before the civil war?

Major MILLS. Yes, sir.

Mr. HERBERT. Was there any scarcity of water then?

Major MILLS. Yes, sir; about once in seven years there was a dry season, but not so excessive as lately. I never knew of two dry seasons coming together before.

Mr. HERBERT. Did the river ever go dry above El Paso before the war?

Major MILLS. Yes, sir; about once in seven years.

Mr. HERBERT. During the other six years how was it?

Major MILLS. There was abundance of water.

Mr. HERBERT. For all purposes of irrigation?

Major MILLS. In fact there was too much.

Mr. HERBERT. How much land was there in cultivation at that time?

Major MILLS. There was probably three times as much land in cultivation as there is at the present time. Perhaps on the Mexican side of the river in the El Paso Valley there was between 40,000 and 50,000 acres. On the American side there was between 20,000 and 25,000 acres. In the Messila Valley there was perhaps 45,000 acres.

Mr. HERBERT. Did I understand you to say there are 50,000 on each side?

Major MILLS. Fifty thousand on each side.

The CHAIRMAN. Give us some idea of the Messila Valley.

Major MILLS. It is that valley of the river above the pass at El Paso and below Fort Seldon, which is 68 miles above El Paso.

The CHAIRMAN. That portion of the Rio Grande Valley between El Paso and Fort Seldon is called the Messila Valley?

Major MILLS. Yes, sir.

The CHAIRMAN. It goes down to Las Cruces?

Major MILLS. Yes, sir, and below to the Pass.

Mr. HERBERT. Thirty or forty years ago, was there any dry weather between El Paso and Presidio del Norte?

Major MILLS. I think the drought came all along, and that the river ran dry about Messila in former years on down to Presidio del Norte.

Mr. HERBERT. When it goes dry now, it is over the same region?

Major MILLS. No; it is dry now to Albuquerque.

Mr. HERBERT. How far is it from Albuquerque to Messila?

Major MILLS. It is about 200 miles.

Mr. HERBERT. So before the war it only became dry when there was a drought from El Paso down to Presidio del Norte, but now it goes dry from Albuquerque to 200 miles above Messila?

Major MILLS. Yes, sir. Now, as to the remedy. As I stated before, when I went to El Paso in the interest of the Memphis, El Paso and Pacific Railroad, I was looking for a crossing of the railroad over that river. It was considered a more difficult task to bridge a river in those days than now. In this pass I at once saw an opportunity to build a dam and create a great lake, not only for the purpose of irrigating, but to control the great flood that destroyed everything in its course down. I had often spoken to the people about it there, and, as I have indicated, I was ordered to make observations under directions of Major Powell. There were various steps to be taken and investigations to be made. One special one was the silt carried by the water, which was feared to be absolutely prohibitory, some intelligent people contending that the water contained such a large amount of silt that the lake would soon fill with solid matter and become useless. My investigations during the seasons of flow in the river for the past nine months have shown that that is a matter unworthy of consideration; that there is less than one-third of 1 per cent of solid matter in the average at all stages of the river and at all stages of silt; that it would take the flow of the river about a year to fill the lake after it was dammed, and that it would take perhaps three hundred years to fill the lake with silt. Not counting the moving sand at the bottom nor the detritus from the sides of the lake by storm floods, at all events it would take two hundred years to fill, and as we have no engagements beyond that time, I assume that it is not worthy of consideration.

Another thing was the evaporation. That is the greatest obstacle in the way. The evaporation will be between 6 and 7 feet off the surface.

The CHAIRMAN. Annual evaporation?

Major MILLS. The annual evaporation. There is a question, though, how far that will be of the whole surface of the lake. Our observations were taken in a narrow channel of the river, and after it went dry they were taken in pools, and I think that would be excessive compared with the evaporation from a large body of water like a lake

would be. In other words, the dry air passing over a lake would become in the first few hundred yards so saturated with water that it would take up a less amount in passing over the remaining distance of the lake.

Mr. PICKLER. Is there much wind there?

Major MILLS. There is a little more than here, but not much more. There is wind in the spring, when the evaporation is very slight. The evaporation now is about one-tenth of an inch per day, and the evaporation last August, September, and October was about half an inch a day. We gauged the flow of the river as far as we were able to, and we estimated that it would take about a year to fill that lake with water by the average annual flow of the river.

There are two locations that we found practical for building a dam. One is about 4 miles above the town, at the head of the pass, and the other, which is the most feasible, is about 2 miles from the town. The lower one would have one end on the soil of the Republic of Mexico and the other would be in Texas. The upper one would have one end resting in Texas and the other end in New Mexico. The gentlemen of the committee will see that it would be more desirable, it being an international project, to have it where Mexico would have dominion over one end of it. At the time I went to El Paso I found a Mexican federal engineer by the name of Garfias. He asked permission from his Government and received orders to cooperate with me in all my investigations, which he did. We concluded, after our investigations, that the project was feasible and necessary. I furnished him a copy of all the plans, specifications, and estimates, which he carried to the City of Mexico, and he reported to me on his return that he had had an interview with the President and the minister of public works, and minister of foreign relations, and had fully explained the matter; that they had expressed to him the opinion that the project ought to be carried out, and that they would forward these papers to our Government with such a recommendation; but that it would be necessary to refer the matter to a lawyer (they have no attorney-general) for investigation and report on the legal aspects. He has kept them in his hands, however, for nearly three months. They are very slow people there; they do everything to-morrow, and there is no telling when they will get through. There is no doubt, however, that they will approve the project. They propose to bear one-half the expense of constructing the dam, but they claim that inasmuch as we have been depriving them of their vested rights in the water we should move the railroads and condemn the land.

Mr. HANSBROUGH. They would not receive one-half the benefit of irrigation?

Major MILLS. Yes, sir; and also the other benefits in the rectification of the boundary, and in the water power created.

Mr. HANSBROUGH. I understand the dam is above the line?

The CHAIRMAN. He says an end will rest on each side.

Major MILLS. The site above the line would have the right bank about 500 or 600 yards above the line between New Mexico and Old Mexico. The lower site, which is a more feasible one, would have one end in Mexico and the other in Texas.

Mr. HANSBROUGH (referring to map). This is United States soil here?

Major MILLS. Yes, sir.

Mr. HANSBROUGH. Here is where the foundation of this would be?

Major MILLS (illustrating on map). No, sir; that is the line.

Mr. HANSBROUGH. This is Mexico and the dam would be here, or a little above here; therefore they would not have to take the water from the United States through here [illustrating].

Major MILLS. This is a map of the proposed lake, and the lower dam site has one end in Mexico and the other end in Texas. The upper dam site has one end in New Mexico and the other end in Texas, and would necessitate the carrying of water for Mexican irrigation through a quarter of a mile of American soil. I think there will be no question that the lower site would be chosen in preference.

The CHAIRMAN. Have you got an estimate of the volume of water to be in this lake and the cost of the construction of this dam?

Major MILLS. Yes, sir. The lake is about 15 miles long and from 3 to 3½ miles wide. It would submerge 26,000 acres of land. It would contain, when filled to the full line, 500,000 acre-feet of water. I did not know what an acre-foot of water was until Major Powell told me, and probably you gentlemen do not. He tells me an acre-foot is water enough to cover 1 acre 1 foot deep. There would be about 500,000 acre-feet of water in that lake, but it is proposed to have the reservoir consist of only 10 feet on top the lake; that is, the water would be taken out of the reservoir 50 feet above the level of the river. This 10 feet on top would embrace almost half the contents of the lake, being much longer and broader, and would contain 200,000 acre-feet of water.

The CHAIRMAN. Did I understand you to say a while ago that this volume of water would only flood about 1,000 acres of land that is now under cultivation? What proportion of land which is now under cultivation would be flooded by holding this water?

Major MILLS. On the Mexican side of the river now——

The CHAIRMAN. On the American side.

Major MILLS. There is perhaps 10,000 or 15,000 feet.

Mr. LANHAM. I do not think you understand the chairman's question. He wishes to know what proportion of the land now under cultivation would be flooded by this water.

Major MILLS. It is less than 1,000 acres. We were some three months in making the survey. The first thing we did was to make a survey of the contour of the lake, the flow line of the lake, which is shown here.

Mr. HERBERT. How wide is the Rio Grande where the dam is proposed to be built?

Major MILLS. The lower side is 500 feet.

Mr. HERBERT. And the depth there?

Major MILLS. From the surface of the water to the bed rock?

Mr. HERBERT. Yes, sir.

Major MILLS. From the surface of the water to the bed rock would be 22 feet at the deepest place.

Mr. HERBERT. With the river at what stage?

Major MILLS. At the stage of the water at which we made the survey, which was very low.

Mr. HERBERT. The water itself is 22 feet deep?

Major MILLS. No, sir; there was no running water in the river when we made the soundings for bed rock.

Mr. HERBERT. Then you mean it will be 22 feet from the bed rock up to the height you raise the water. I want to know how high the dam will be?

Major MILLS. The dam will be 65 feet above the level of the water at the time we made the survey.

Mr. LANHAM. How high are the mountains on either side of the pass?

Major MILLS. At the upper side 115 feet near the river.

Mr. HERBERT. If you raise that dam 65 feet, would it not endanger the town of El Paso below it; that is, in case of a rupture of the dam, would it be disastrous?

Major MILLS. Yes; in case of a rupture there would not be much left, I suppose. It would utterly destroy the city and the valley below.

Mr. HERBERT. The whole town of El Paso is below the level to which you propose to raise this dam?

Major MILLS. No, sir; not the whole town. I live in a house above the level of the lake. That was jokingly referred to by some individuals as evidence that I was afraid of my project. I am asked the question whether, if the dam should break, it would destroy the town and drown the people. I say it would; but there is not the slightest danger of the dam breaking if it is properly built.

Mr. HERBERT. What is the population of El Paso?

Mr. LANHAM. It is about 11,000 by the last estimate.

Major MILLS. I believe that is right. The flow line of this dam will be only 60 feet above the level of the water of the river. The dam is to be built 65 feet, so as to guard against a possible flow or cataclism or a tremendous rush of waters in the lake. The waste weir or "by-wash," as it is called, will be over a little granite mountain where the fall would be gradual. It would be 200 feet wide, and there is no doubt it will carry all the water ever coming into the lake before it would rise 5 feet over the crest of the dam.

Mr. HERBERT. Does it carry it around the town of El Paso?

Major MILLS. No, sir; to the channel below, so as to avoid the danger of the dropping of water from the crest of the dam. It would endanger any dam for a great and heavy fall of water to drop 65 feet, as it would create a tremor in the walls of the dam.

Mr. HERBERT. Is there any opposition to the project among the people of the town of El Paso?

Major MILLS. No, sir; none at all, on either side of the river, that I have heard of.

Mr. PICKLER. Who owns the lands of the Messila Valley?

Major MILLS. To be submerged in New Mexico there are two Spanish grants. No one has the title to any land that will be submerged in New Mexico. There is about one-third in New Mexico and two-thirds on the Texas side, which latter is owned by perhaps twenty or thirty parties. The upper portion of the land is held under an old Spanish grant confirmed and patented by Texas by a few individuals, which embrace several thousand acres, but there is none under cultivation. In framing a bill to carry out this work great care should be taken to provide for condemnation, for people want to get all they can, and I have no doubt some men would ask \$100 an acre for land that is not worth 100 cents.

Mr. LANHAM. What is the value of land there at this time?

Major MILLS. It averages about \$2.50 an acre. I have had 100 acres for about thirty years which I got for surveying this large tract, and it is the best land in the valley. I have offered it repeatedly for \$3, and I could not get it, and still have to pay the taxes on it. I am willing to take that for mine, and I think \$2.50 is a fair price on an average.

Mr. LANHAM. I wish you would state to the committee what effect the proposed dam will have in reference to the correction of this boundary line.

Major MILLS. I was informed by Major Powell that he had no money to expend below El Paso, so I asked the county surveyor to make a survey of the meanderings of the river from Fort Hancock, which is 54 miles below El Paso. He took the records in the county surveyor's office of the meanderings of the river as it runs now, as it was in 1858, and as it was in 1849, and these lines represent the river as it ran at those different dates [exhibiting same on table before the committee]. This is a photograph from the map in which the scale was 2,000 feet to the inch, and of course, being a photograph, I could not give the scale exactly. This is El Paso [illustrating]. This is the line between Mexico and New Mexico. Here is where the lake will be.

I want to state something on this question. It was urged by the people of El Paso that the Mexicans were violating the treaty of Guadalupe Hidalgo, and here is a report made by Major Ernst in regard to the investigation he made, showing how changeful the river is. When Major Ernst made his survey in 1855, the river ran here. This is where it runs now; the red line shows it. In 1827 the river ran here, and it has been moving to this point [illustrating]. I simply show you this to let you understand it. You see here that this moving of the river has destroyed the best portion of the city of Juarez.

Mr. PICKLER. What is the name of that city?

Major MILLS. Juarez. It used to be called El Paso, but since we have named our town El Paso they changed it.

The CHAIRMAN. What document is that?

Major MILLS. It is a Senate document of last session.

Mr. HERBERT. Is that on the same scale as this [referring to another map]?

Major MILLS. That is much smaller.

Mr. HERBERT. How much has it moved?

Major MILLS. It has moved from half a mile to a mile at different points. By taking up this map you will see that this is the line of the river when I made my surveys in 1858. I can show you better on this [taking another map]. In 1858, when I made the survey—this is my meandering line where the river ran at that date. Since that date the river has changed to this position [illustrating]. The next high flood in the river it will come here [illustrating]. The river floods and raises the banks by deposits, so that eventually that side of the valley becomes higher than the opposite, and the next unusual flood moves the channel to the other side of the valley. Sometimes the change takes place by erosion and deposit and sometimes by avulsion or cut-offs. I believe the treaty which fixes the boundary line between the United States and Mexico is generally understood to mean that when a change takes place under the water the boundary line moves with the river, but when by avulsion or a cut-off the boundary remains unchanged.

The CHAIRMAN. What is the boundary line of the treaty?

Major MILLS. I have the treaty here. Some people give it one construction and some another. Mexicans hold that the line should remain all the time where it was at time of the treaty. I do not feel competent to give it a construction other than I have mentioned; that is, the general theory, that the line moves with the river when an erosion or deposit takes place under water, but when an avulsion takes place then the line remains in the old channel. Here are some tracts of land marked B B. There is one 4 miles long and 2 miles wide, containing

something like 5,000 acres. Five years ago the river ran here. This is Mexico on that side. It changed from here and ran where this dim line is. It was in red ink, and it did not take well in the photograph. The people live on the Mexican side of the river now, but in the United States formerly. The Mexicans down here at San Ygnacio had a ditch right from the Rio Grande to irrigate their lands, and now they have to go 3 miles through Texas soil to take out a ditch from the river in Texas, and they have to bring that water 3 miles through Texan lands to irrigate this land, owing to the shifting of the channel of the river. All this is proposed to be remedied by the construction of this dam and reservoir. In the spring, before the floods come, the 10 feet of the reservoir will have been depleted of its waters by irrigation and maintaining a current in the channel of the river during the dry season; then when the floods from Colorado come from the melting of the snow, the reservoir will catch the flood waters, and it will be feasible by gauge to allow just so much water to pass through to the river below every month in the year, and thus avoid any suffering from the drought or any destruction to the banks by any overflowing and changing boundary line in the lower lands.

Mr. LANHAM. Do you think it possible to make a uniform flow of the river?

Major MILLS. There is no question about it, if we can build this dam and reservoir.

Mr. PICKLER. What is the proposed length of the dam?

Major MILLS. The lake is a little under 15 miles long from the upper dam site; it is 14½ miles long—you mean the dam. The dam at the upper site is 400 feet long and at the lower 500 feet long.

The CHAIRMAN. What would be the abutments of the dam?

Major MILLS. The abutments at the lower site on the right bank, on the Mexican side, would be granite. There is a granite mound about 110 feet high on the Mexican side, and on the American side it is a conglomerate, principally of limestone, which is almost as hard as the granite.

The CHAIRMAN. What is the depth of the sand?

Major MILLS. At the upper site the maximum depth of the sand is 50 feet; at the lower site it is 22 feet.

The CHAIRMAN. Still you have not got the bed rock when you get the water. How deep is it to bed rock?

Major MILLS. Twenty-two feet is the deepest place at the lower site and 50 feet at the upper site.

The CHAIRMAN. There is an underflow at all times when the channel is dry?

Major MILLS. Yes, sir.

Mr. HERBERT. Have you made a calculation as to how many cubic feet of water passing out of these gates every day during the dry season would be required to maintain the water at a uniform volume?

Major MILLS. Yes, sir. From our investigations we have estimated that the mean annual flow would be 1,200 cubic feet per second, and that 400 feet (one-third) should pass the dam constantly to maintain a flow in the channel.

Mr. HERBERT. Have you put that in any report?

Major MILLS. Yes, sir. The flow in order to irrigate would depend entirely upon the number of acres to be irrigated on either side, and it is estimated that an acre-foot of water would irrigate an acre of land.

Mr. LANHAM. You made a report to Major Powell?

Major MILLS. Yes, sir; I made a full report to Major Powell?

The CHAIRMAN. Give us an idea of the cost.

Major MILLS. The cost of the dam proper would be from \$200,000 to \$300,000, depending upon the site chosen; the upper one \$300,000, the lower \$200,000. The cost of the land would be about \$75,000 to \$100,000. The cost of the removal of the railroads is the largest item.

Mr. LANHAM. You have not explained that to the committee.

Major MILLS. No; I have not. If the gentlemen care for me to make a full explanation, it would be better to have it in another session, if you are willing to hear me, as it would take some time.

The CHAIRMAN. It seems to me this is a very important subject, and it is hardly worth while to let it go in the present state. I leave it to the pleasure of the committee.

The matter was here debated by the committee, and finally Mr. Lanham made the following motion:

I move we adjourn, to meet on Saturday next at 10.30 a. m., in continuation of the matter now under consideration, with the understanding that Major Powell and Major Mills are to be here at that time and give us additional facts upon this proposition.

The motion was agreed to, and thereupon the committee adjourned, to meet at 10.30 o'clock Saturday, February 8, 1890.

COMMITTEE ON IRRIGATION,

Saturday, February 8, 1890.

The committee met pursuant to adjournment, Mr. Vandever in the chair.

STATEMENT OF MAJ. J. W. POWELL.

Maj. J. W. Powell, Director of the Geological Survey, then addressed the committee as follows:

Mr. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: Since the last meeting I have prepared a map of the valley of the Rio Grande, from its head waters to El Paso, the point where it becomes the boundary line between the Republic of Mexico and the United States, for the purpose of placing before you the general problems of that valley, especially those which bear upon the matter which was before you at the last meeting, relating to the utilization of the waters at El Paso. You will see the boundary line between Colorado and New Mexico here [illustrating]. I have divided the valley of the Rio Grande into sub-districts. In each district there are different problems, and yet to some extent they are interdependent, and all affect the problem of the use of the water in the Rio Grande at El Paso. In Colorado I have mapped out two districts. The Saguache district is drained by a stream which ordinarily does not flow into the Rio Grande. It is on rare occasions that the water of the Saguache flows into the Rio Grande. The waters are used and will be used in the immediate valleys. In Colorado we have the head of the Rio Grande, as you see on the map. That portion of the river [illustrating] runs through the San Luis Valley, and it is claimed by an engineer to be sufficient to irrigate 3,000,000 acres of land.

Mr. HERBERT. Is that the State engineer of Colorado?

Major POWELL. No, sir; the most of that work is in the hands of an insurance company. An insurance company is investing its funds in the construction of canals and the purchase of lands, and is in part proprietor of the lands, but in the main is now proprietor of the irrigating works. Their engineer, Mr. Graves, tells me that they have already canals constructed and projected to irrigate 3,000,000 acres of land. If this is completed, it may be expected that all the waters falling north of this line will be utilized.

Mr. HERBERT. Do they impound any waters?

Major POWELL. Not yet.

Mr. HERBERT. Do they contemplate impounding waters under that system?

Major POWELL. Yes, sir; I understand they do.

Mr. HERBERT. So you think they will take up all the waters by this construction of canals?

Major POWELL. Yes, sir; if they complete their system, they will do it. They have spent several million dollars, I understand, in that valley.

Mr. HANSBROUGH. Where will they impound that?

Major POWELL. At various places along the stream tributary to the Rio Grande.

Mr. HERBERT. Who did the surveying?

Major POWELL. Their own engineer, Mr. Graves, so far as it has been done at all.

Mr. HERBERT. Did he utilize to any extent the surveys made heretofore by the Geological Survey?

Major POWELL. None have been made.

Mr. HERBERT. Colorado was surveyed by—

Major POWELL. By Hayden.

Mr. HERBERT. Did they not utilize Hayden's survey to some extent?

Major POWELL. They had a general map. Hayden's surveys did not take into account the hydrographical conditions.

Mr. HERBERT. They marked it off—what do you call that system of surveys—it escapes me at the moment—by which you get levels?

Major POWELL. Contours.

Mr. HERBERT. Have you made contour maps?

Major POWELL. In the Hayden survey the contours were 200 feet apart, and were not available for this purpose. Near the State line the Rio Grande enters a canyon, and there is no irrigable land on either side—that is, not to amount to anything—after reaching the point here.

Mr. HERBERT. If it will not interrupt you, before leaving Colorado here—it was stated yesterday by Major Mills that there had been 331 ditches or canals made in Colorado.

Major POWELL. These are scattered in this system I am speaking of. This company has taken up the canals, and consolidated them, and has taken old Spanish grants and bought titles to some of the land and has taken options on other lands. This is the system which is prevailing very largely in the West.

Mr. HERBERT. Does any railroad run through that?

Major POWELL. Yes, sir; here is the Taos district, which lies in here, and is drained by the Taos River, which ultimately will have all its waters used. Here we anticipate that no water will be fed to the Rio Grande ultimately.

The CHAIRMAN. You know the Taos district has been a rich agricultural district for many years. I know in early times all our supply of flour came from the Taos Mills, carried over the Urus Mountains by bullock teams.

Major POWELL. The Chama River comes next. There is a good deal of irrigation by the Chama, but it is difficult to store and manage its water; but it is anticipated that all the waters of the Chama will be utilized in its valley, so that ultimately all its water will be kept from the Rio Grande. I am going to show what waters will be left for these people of the Lower Rio Grande.

The CHAIRMAN. In that connection allow me to make this statement. There are two great pueblos, village settlements, originally the pioneers of this system of irrigation in a rude way, and from whom we have gotten a good many ideas about it.

Major POWELL. These people probably irrigated a thousand years ago; that is, the Indian inhabitants.

Mr. HERBERT. Are the remains of their ditches perfectly apparent?

Major POWELL. Not always; but they are sometimes. They are all irrigated in a small way.

The CHAIRMAN. Many of the descendants are still living there?

Major POWELL. Many of them are living there. There are twenty-nine of those pueblos within the territory of the United States. The next is the Espanola or San Il Defonso Valley, which is mostly irrigated from small streams that come from the great mountains on the east—a great system of mountains—and there are ten or a dozen Indian villages in the valley supported by irrigation. There are also a number of Mexican settlements dependent on irrigation. The valley is a large and beautiful one, and a great area can be utilized by taking the waters which fall on the mountains and come down through Embudo canyon, to be spread upon this valley. So up to this point at the foot of Espanola Valley all the waters of the Rio Grande will be cut off ultimately. Going from this point down to that point [illustrating], about 50 miles by the windings of the canyon, there is a deep gorge varying from 600 to 1,000 feet in depth. There is no land along the streams that come from very high mountains, on either side, streams which furnish a large body of water that can be taken out above Bernalillo at the mouth of White Canyon.

Here is Santa Fe Creek. We have completed a survey of the Santa Fe Creek. Already there is a great deal of irrigation along it. All the civilization along the Santa Fe Creek depends upon that stream, and it will be taken up. Here is the Tewan Plateau, drained by the Jemez, which is a little stream. I have brought the map of the Jemez as an illustration of this district, showing how the waters of the Jemez district will be cut off, so that it will not contribute anything to the Rio Grande. The irrigation survey has extended over only three regions in the Rio Grande, so what I say is from general information and a study of the subject in that region of country, in which I have traveled a good deal in the last twenty years; but the Santa Fe Creek and the Jemez River districts have been surveyed, so what I say about them is from actual survey. What I say about the rest of the country is from general information.

Here is the creek, which you see on the map heading in the Tewan Mountains. The Tewan Mountains are volcanic. The mountains rise from 9,000 to nearly 12,000 feet above the level of the sea, and hence

there is a great condensation of water; the rainfall is great. High up in these mountains are many beautiful meadows. Its valleys are timbered in part, and there are many beautiful meadows and a great many beautiful streams of water, small creeks—rivers they call some of them—that all unite and form the Jemez River. The Jemez, after it emerges from these mountains, has to pass over a sand plain of about 26 miles in width, and it loses its water largely; and although it is always a large river above it sometimes gets dry near its mouth, and it never discharges into the Rio Grande more than a small part of the water coming from the mountains. In order to utilize the Jemez it has to be taken out above, and it must be managed in this way. I have surveyed seven reservoir sites in the stream above, and I have made plans not yet complete, but which for the purposes of this exposition are sufficient. The waters can be taken out at this point with a diverting dam here [illustrating].

On these plains, on the mesa back of Bernalillo and Albuquerque, are the lands on which the water can be used. At present that river—I am speaking from memory—is able to serve about 1,600 acres of land. It is estimated that, by storing the water and taking it out at the foot of the mountains before it enters the sands, about 150,000 acres can be irrigated by the storage of the water and the construction of canals. It is manifestly to the interests of the people that this should be done, rather than by some process it should be declared that the waters must flow into the Rio Grande in order that they may be used below; for if used below they will irrigate but hundreds of acres, while if used above they will irrigate thousands. It is an important question of public policy whether to establish water rights to irrigate thousands of acres in the lower regions or to establish right to irrigate millions of acres above. That is the problem confronting us everywhere in the valley of the Rio Grande. In all the regions I have mentioned should it be declared by the courts that the waters of the upper region must flow to the lower region, it would cut off millions of acres that can be irrigated above to supply a few thousand acres below. So it is necessary for the ultimate development of that country that the people of Colorado be allowed to use the waters of that State, and that the people of the upper tributaries and upper valleys of New Mexico be permitted to use the waters there as they have been doing. But that means that the waters must be cut off from below; yet they have rights which can not be ignored. The established but comparatively small industries below ought not to be ruthlessly destroyed that great industries may be developed in the future.

The CHAIRMAN. Do you know the proposition is to dam the river below and catch the surplus of water that flows in it during the flush season of the year?

Major POWELL. I will bring that point out, Mr. Chairman, before I get through. The Jemez and the Santa Fe will all be taken out and utilized above, so no water will be contributed in flood time. Now, understand, I am not speaking of what it is now, but what it will be ultimately. They will store the waters and cut off the floods and the waters which run down during the season of irrigation, and we must look ahead a little. It will be but a little time until they cut off all the flood waters above White Rock Canyon, and there will be no waters to store for the lower region. From the mountains on either side a large body of water will always flow through this White Rock Canyon,

and at its mouth the waters can be taken out. The present flow of the river during the season of irrigation is already utilized by the Mexican and American settlements from this point down to Fort Selden. The waters in the dry season are taken up now by the settlers, and the increase of the area of irrigation has to depend upon the utilization of the flood waters. All the increase has to depend upon the utilization of the flood waters.

Now, the proposition is to collect these flood waters at El Paso, for below. That is the proposition laid before you the other day. There may be a lake made at El Paso to contain 27 square miles of water, which will store 500,000 acre-feet of water. By an acre-foot of water, I mean an acre of water 1 foot deep, and it is a very convenient unit, because an acre-foot of water will irrigate under good management about 1 acre of land. It is proposed to store at El Paso 500,000 acre-feet and annually use 300,000 acre-feet, enough to irrigate 200,000 acres of land. Now, the question is, Where will this water come from? If we catch the flood waters above and turn them upon the lands in Colorado, on the Chama Valley, on the Taos Valley, on the Española Valley, on the Jemez Valley, on the Santa Fe Valley, and below White Rock Canyon, on the Albuquerque Valley, where will the water come from to supply the El Paso reservoir? There are two or three small creeks below there. There is one and here is one [shows on the map]. These small creeks come in, but the people on these creeks are taking out the water on their lands just as they are above. Now, the survey has not proceeded far enough to show that the storm waters of that region and the waters which can be cut off below the big White Canyon I have mentioned will be sufficient to preserve the rights of the people who are settled in the Albuquerque Valley and in the Mesilla Valley—to preserve all their rights—so as not to destroy the irrigation already practiced and get a sufficient flow to fill the reservoir at El Paso. I believe it is sufficient, but it is not right to accept that belief for more than it is worth. It is not based upon a hydrographic survey, so as to have the facts absolutely.

There is one other point about the El Paso plan. The construction of the dam is a feasible thing, and the ground on which the dam is to be built is an admirable situation for that purpose, and a dam could be constructed there which no streams can affect. It is an admirable site upon which to construct the dam. The theory and principles upon which they build these dams now are very well known. Men have been experimenting for thousands of years, and they have been built all over the world. We know a dam can be constructed and such a reservoir be made as was presented to you the other day, and there is no difficulty in making it sufficiently safe for all purposes. The real point is, when it is done, will there be water enough to fill it? There is water sufficient now, as shown by the work of the survey, and it is estimated that that reservoir will be filled with water in one year's flow. I think it will be filled with a great deal less than one year's flow. That is my judgment, but I am not sure of that, not having the surveys of the regions above completed. There is one other point: Is it the best place to store these waters?

There are three complications about putting it where it is now planned: The Southern Pacific Railroad passes through the valley, and it would have to be moved up onto high ground. The Atchison, Topeka and Santa Fe road runs through the same valley across this reservoir site,

and would also have to be moved out, and there is a little irrigation in there that would have to be stopped. There are three vested rights in the valley which would have to be condemned by some process or other, and that complicates the question very much. I do not know it positively, but I believe it is at present the best site. The survey of the upper region has not been extended so far and thoroughly that I could say that we can store it at that point better than any other point.

Mr. LANHAM. This does not propose to fix absolutely the site.

Major POWELL. I think the bill is very wise in that respect. I think an inquiry ought to be made and the survey extended farther to show if this is the most practicable point; first, to see if there will be water sufficient to fill it if the water is cut off above and whether the rights of the people in the valley above can be protected in the lands already irrigated, and whether these waters which flow can be divided between these districts so that a sufficient amount of water will be left to fill the lake.

It will be seen that there are several interstate problems involved. There is the interest of Colorado. Then there is the interest of New Mexico and the interest of Texas to be considered; and then there is an international problem between the United States and the Republic of Mexico. So there are two interstate problems and one international problem involved in the proposition. It must be understood all the time that there is more land everywhere all along that valley than there is water, and hence the values do not inhere in the land, but the principal values are always in the water rights. When we speak of land being \$50 and \$100 an acre, it must be considered that the value of an acre of land is governed by the value of the water right, and the real value inheres in the water. At present there is no law arising from legislative or judicial action to control the division of waters. Some system must be devised for this purpose, and I think while on this ground I will proceed a little further. The English law of riparian rights, which relates to the use of streams and which we have inherited and extended through the courts of this country, recognize two classes of uses; one, the use of water which is to be returned to the channel and the other the consumption of water. For example, the water used as a power can be returned to the stream; the water used for domestic purposes is consumed.

Now, the analogies of water used for irrigation are of both characters; a part of the water is consumed and a part is returned to the channel, and on reading the decisions of the courts you will find that sometimes the decisions have been made on the theory of the laws which govern the consumption of water, while sometimes, on the other hand, the decisions are made on the theory that the water is to be returned. So we have no body of consistent judicial decisions especially adapted to this new condition which has sprung up in the United States and which is recognized in the Spanish law, and in the Italian law, and laws of countries where irrigation is practiced. Here there is no legislative or judicial law deciding what are the rights of the people. The decisions seem to be contradictory.

I did not bring the papers which would explain the proposition of this dam, as I supposed Major Mills would be here, and I presume I had better leave that to Major Mills himself. What I want to make clear about it is that at the present stage of affairs, it seems to me, perhaps I am going too far in speaking about it, but at the present

stage of affairs it seems to me that the inquiry should be first made as to where the dam should be constructed and whether we can have water sufficient to fill it.

Mr. LANHAM. This bill does not propose to fix a site for the construction of this dam.

Major POWELL. I know it does not. The bill is just right.

Mr. LANHAM. Now, I want to ask you a question, Major Powell. During what is known as the torrential flow of the Rio Grande, which is about three months, from the middle of April, say, up to July, is not there a vast amount of water ordinarily flowing down the stream?

Major POWELL. Yes, sir.

Mr. LANHAM. I wish you to give the committee some idea of the practicability of storing the waters during the torrential flow by the building of this dam or storage reservoir, as indicated in the measure under consideration.

Major POWELL. There is no difficulty whatever in storing that water at El Paso. There is no difficulty by this means of correcting and fixing the boundary line between Mexico and the United States. The only point about it is, Will there be flow sufficient to fill the dam when the people up there use the water for irrigation purposes?

Mr. LANHAM. You think it is feasible under the present conditions?

Major POWELL. Under present conditions it is possible to accomplish it.

Mr. LANHAM. I wish you would speak in regard to the boundary line below in case this reservoir is constructed.

Major POWELL. The river below El Paso for a long reach flows over a low flood plain, like the valley of the Mississippi, onto which the river may turn out at any flood time. When the flood season comes on it fills the existing banks, which are forever choked in low-water time by sands which have drifted more or less. During the flood season the river turns out of the natural channel and pours over this flood plain, and cuts for itself new channels. The conditions for that cutting are exceedingly favorable, because it is a flood plain of sand, largely of drifting sand; so when it goes out in the flood season you never know where it will be established at the end of the season, whether it will return to the old channel or flow in a great curve somewhere else. As long as the center of the flow in the channel is the boundary between the two countries it makes a shifting, variable boundary line. By cutting off that flood, which is entirely practicable—there is no difficulty in doing it at all—by a reasonable expenditure, that flood can be prevented, so that there will be a regular flow of water which comes down. The channel will sometimes be dry, and sometimes in the flood season will carry water, but it will carry a very much smaller amount of water, and the danger of avulsions of tracts of land can be avoided by the building of this dam.

Mr. LANHAM. During this flood season or torrential flow in the Rio Grande does not a vast amount of this water flow down before it is needed for irrigation, early in April, up in Colorado and New Mexico?

Major POWELL. The water for irrigation is used in Colorado for about fifty-five days. As you go down the river you go southward, and you are constantly reaching a warmer climate, and the season for irrigation is longer. You may get in the lower part of the Rio Grande two crops. Sometimes the season may be three or four months long below. So the season for irrigation is variable from north to south, and if you

are only to utilize the water which flows during the season of irrigation above, then there is no difficulty in filling this lake below; but I am going on the supposition that the people are going to store these waters above and use them themselves, and that process is beginning. Then the point is, How much water will ultimately—not now, but, say, fifteen or twenty years from now—be permitted to flow down? I was hardly believed when I wrote, fifteen years ago, that this generation would have this water-right question sprung upon it. It has come ten years earlier than I estimated when I wrote my first book. Then I did not dream that these communities would be protecting their rights with shotguns, in the courts, and in all manner of ways. Mr. Vandever knows of this in his own district. This history should be a lesson, so that if provision is made to store waters now running to waste further provisions should be made to divide the waters and protect the storage properties.

The CHAIRMAN. Have you made an estimate of the percentage of wastage by the evaporation in this proposed lake?

Mr. LANHAM. Major Mills said it was about 6 feet, I believe.

The CHAIRMAN. I want an estimate of the ordinary evaporation of this lake as compared with other lakes.

Major POWELL. The conditions of waste by evaporation are somewhat multiform and complex, as they depend upon the relative humidity of the atmosphere. If there is a great deal of rainfall in a region of country, there is less evaporation. There is greater evaporation from north to south; the further south you go the warmer the winds are, and consequently the greater the evaporation. The four chief factors which affect evaporation are the distance from the equator, distance from the level of the sea, relative humidity, and the prevailing winds. To store these waters here is to store where there is 6 to 7 feet of evaporation annually. To store the waters here [illustrating] is to store it where there would be 30, or at most 40 inches of evaporation. This is on one of the tributaries —

Mr. HERBERT. The altitude is how much?

Major POWELL. The reservoirs will be 11,000 feet above the level of the sea.

Mr. HERBERT. And the distance from El Paso will be how much?

Major POWELL. About 320 miles.

Mr. HERBERT. Nearly due north.

Major POWELL. Yes; nearly due north, but a much lower altitude.

The CHAIRMAN. What is the altitude of El Paso?

Major POWELL. I will have to look at the map.

Mr. HERBERT. Major Mills said it was 3,000 feet.

Major POWELL. I have so many figures constantly before me that I can not remember all the altitudes.

Mr. LANHAM. You were at El Paso last summer?

Major POWELL. Yes, sir.

Mr. LANHAM. You made an examination of the Rio Grande Valley above and below El Paso?

Major POWELL. Yes, sir.

Mr. LANHAM. The river at that time was absolutely dry?

Major POWELL. Yes, sir.

Mr. LANHAM. Did you talk with the Mexican people on the other side of the river with reference to the trouble in this respect?

Major POWELL. I did; and I went over their lands.

Mr. LANHAM. Do you know for how many miles the river was dry at that time?

Major POWELL. I should think about 300 miles.

Mr. LANHAM. Do you attribute that dearth of water in the Rio Grande to the fact of these irrigating ditches and canals having been taken out above?

Major POWELL. Yes, sir, and no, sir. It needs explanation. The primary cause was that it was a very dry season; but, although the season was dry, had there not been irrigation above the water would have flowed through for perhaps two months' longer time. There would have been a constant flow of water in the Rio Grande for perhaps 200 miles farther down if the waters had not been cut off above.

Mr. LANHAM. What was substantially the complaint on the part of the Mexican people in relation to this matter?

Major POWELL. That they had been irrigating for a century, or perhaps two centuries, and that they had never before had their water entirely cut off. There would be sometimes dry seasons in the last part of the irrigating season when they would not have sufficient water, but now for the first time the water was cut off early in the season of irrigation, so as to utterly destroy their crops.

Mr. WALLACE. What is the area of the flood plain below El Paso?

Major POWELL. I do not know that; Major Mills knows it. From that point I have never seen it except near El Paso. It has not been surveyed.

Mr. HANSBROUGH. Irrigation extends below El Paso how far down?

Major POWELL. Nearly to the Gulf of Mexico.

Mr. HANSBROUGH. The creation of this lake would interfere, would it not, with those interests?

Major POWELL. Not much.

Mr. LANHAM. Not much, for the reason that below El Paso, as you go down, they have confluents—the Pecos, which is a fine stream, and other streams.

The CHAIRMAN. Where is the Pecos Valley?

Major POWELL. It is 200 miles below.

The CHAIRMAN. Below what?

Major POWELL. Below El Paso.

The CHAIRMAN. What is the extent of the streams on the Mexican side?

Major POWELL. They are of considerable size.

The CHAIRMAN. Do they contribute considerable to the flow of the stream?

Major POWELL. Oh, yes.

The CHAIRMAN. When you get into that portion of the Rio Grande that runs dry, you do not have to sink very far in the sand until you come to water where there is an underflow?

Major POWELL. Yes, sir.

Mr. HERBERT. This proposed site of the reservoir at El Paso was once a lake, was it not?

Major POWELL. No; I do not think it was a lake. I think it is a flood-plain deposit. At the same time it may have been overflowed.

Mr. HERBERT. Major Mills suggested it was once a lake, but you do not so understand it?

Major POWELL. No; I understand it to be a flood-plain deposit like the valley of the Mississippi.

Mr. HERBERT. What is it composed of—clay, sand?

Major POWELL. Clay, sand, and gravel.

Mr. HERBERT. Would it retain the water well, or not? Is there enough clay to insure the holding of water?

Major POWELL. Oh, yes. There is a curious state of affairs. Here is a river coming down, and standing right athwart it is a granite and limestone ledge. There is solid rock upon which this dam can be built. As the valley goes up it widens out into a great flood plain.

Mr. HERBERT. You say the soil is of such a character as to hold water?

Major POWELL. To hold water; yes, sir.

Mr. HERBERT. You say the waters are used for irrigation in Colorado for about fifty-five days in the year?

Major POWELL. Yes, sir.

Mr. HERBERT. During what season is that?

Major POWELL. That will commence about the 1st of May and end near the last of June.

Mr. HERBERT. Is that the season in which there is drought now below?

Major POWELL. Only in part.

Mr. HERBERT. The dry season below is when they catch the water above?

Major POWELL. In part, and in part later.

Mr. HERBERT. Are there many catch-basins in which water is stored now in the upper regions on the tributaries?

Major POWELL. The waters are not now stored. There are some small exceptions, as at Santa Fe.

Mr. HERBERT. The season of drought below is not the season during which they are utilizing the waters above. Then the irrigation above does not affect the river below at the time when the waters would be used for irrigating purposes there, the climate being different?

Major POWELL. You have spoken of an extreme case. As you go down the valley the season is longer and longer; when you get to El Paso it is practically coincident with the season in the valley immediately above.

Mr. HERBERT. It becomes gradually more and more coincident as you go down?

Major POWELL. Yes, sir; the waters from the upper region permeate the sands, and are practically stored to some extent in the sands, and find their way slowly down. From the Albuquerque Valley—from this point to that point [illustrating]—it is a sand plain such as I have described. It is only a sand plain from that point to this [illustrating on map].

Mr. HERBERT. The bottom of the river is also sand?

Major POWELL. Yes, sir; the water rolls down in this sand and is largely evaporated. There may be coming through that canyon a great river, but it would not reach here [illustrating]. There is a fine river coming out of that canyon, but it spreads in the sands here.

Mr. HERBERT. Take the two sections of the country, now, from the southern boundary of Colorado up to the source of these streams, and that other section from Santa Fe up to the lower boundary of Colorado; can you tell how much land is now irrigated in each of those sections?

Major POWELL. In the first a rough estimate would be 150,000 acres, and in the second from 35,000 to 40,000 acres.

Mr. LANHAM. Did you make any observations in regard to the agriculture and vineyards and so on below El Paso in the valley of the Rio Grande?

Major POWELL. No, sir.

Mr. LANHAM. And of the number of farms, etc.?

Major POWELL. No, sir.

Mr. LANHAM. I want to ask you this question, in order to bring it prominently to the attention of the committee. That river being dry above and below El Paso for two or three hundred miles, no water in it, and that being a valuable tract of country below El Paso on either side, both belonging to the Mexican people and to our people, what remedy do you suggest?

Major POWELL. The remedy is to store the surplus water of the floods.

Mr. LANHAM. And that is proposed by this dam?

Major POWELL. That is the proposition which is made. The only thing I spoke about was whether there would be sufficient water to fill so great a lake as we have talked about. At present there would be.

Mr. LANHAM. The rainfall in that region is not an important factor, so far as the growth of crops and cultivation of the soil are concerned, is it?

Major POWELL. No, sir; not at all. It is totally inadequate.

Mr. LANHAM. They depend almost absolutely and wholly upon irrigation?

Major POWELL. Yes, sir.

Mr. LANHAM. Then, unless some sort of remedy like this contemplated can be effected, the people in the lower valley at this point, in the valley between Presidio del Norte and El Paso, would have to abandon it?

Major POWELL. Yes, sir; the point simply is, how are the waters to be divided, and how will it be possible to protect the rights of the people of Mexico and Texas and permit that irrigation above.

Mr. LANHAM. Do you believe under present conditions that if that dam were constructed, and you think it can be—

Major POWELL. There is no doubt about it.

Mr. LANHAM. You believe if that dam were constructed under present conditions that that lake or reservoir could be filled with water?

Major POWELL. Under present conditions it could be.

Mr. LANHAM. And it may be years and years before the complete absorption of the water above would occur?

Major POWELL. I think within a decade or two it would begin to occur.

Mr. LANHAM. During this flood flow, when the water is not used above in Colorado and New Mexico for the purpose of irrigation, it would flow on to this point near El Paso into the proposed lake?

Major POWELL. It would if the people above were prohibited from storing any water, and only permitted to use the water at the season of irrigation. Then the dam at El Paso could always be filled.

Mr. HERBERT. But if the people above shall store all the water necessary to irrigate all the irrigable lands above Albuquerque, then there would be no water?

Major POWELL. That goes a little further than I should say. I believe there will be enough to accomplish this general purpose; but I shall not know whether it will be enough until the survey is complete.

Mr. HERBERT. How much rainfall is there annually, and during what months, from Albuquerque to El Paso?

Major POWELL. It is about 10 inches. It varies from 8 to 12, but 10 inches is about a fair mean.

Mr. HERBERT. And above that the rainfall up in the mountains is very much greater?

Major POWELL. Oh, yes; at the mountains, of course, we get 20, 30, 40, and in some places even 50 inches in the high mountains.

Mr. LANHAM. Have you ever been at or near the Rio Grande when there was a flood season from the melting of snows in the mountains?

Major POWELL. Yes, sir.

Mr. LANHAM. Is it not an immense stream then?

Major POWELL. It is a fine stream. It is a very wide but very shallow stream.

Mr. HERBERT. The flood plan you have described, as I understand you to say, is made of silt just like the alluvial plains of the Mississippi Valley, except that it is not so rich?

Major POWELL. It is just as rich, but there is not sufficient rainfall to cover it with vegetation.

Mr. HERBERT. You encounter the same difficulty of keeping the stream within the banks?

Major POWELL. The difficulty on the Rio Grande is much greater than on the Mississippi.

Mr. HERBERT. Because there are no roots of trees and no vegetation to support the banks?

Major POWELL. Yes, sir; and the winds drift the sands and pile them across the channel of the stream and make a great sand drift across it.

Mr. HERBERT. When did you first see the Rio Grande?

Major POWELL. I was on the Rio Grande at Albuquerque in 1870.

Mr. HERBERT. Was it dry then?

Major POWELL. No, sir.

Mr. HERBERT. How far below?

Major POWELL. I can not tell you.

Mr. HERBERT. Have you ever made a study of the question how often the river was dry thirty years ago, before this irrigation began in Colorado?

Major POWELL. No, sir; except by the traditions of the people. I have no absolute facts, but the traditions of the people are that it occurs about once in seven years.

Mr. HERBERT. You have no other means of ascertaining?

Major POWELL. No, sir.

Mr. HERBERT. You agree with Major Mills that it occurs about once in seven years?

Major POWELL. Yes, sir; I should think so.

The CHAIRMAN. You said that the general elevation here is from 6,000 to 8,000 feet, and that the time of irrigation is approximately fifty-five days in the year, confined to the months of May and June. When you get below here—

Major POWELL. It commences earlier and runs later.

The CHAIRMAN. What is the time of flood in the Rio Grande usually?

Major POWELL. I should say it commences in May.

The CHAIRMAN. I have seen a flood in the Rio Grande from Albuquerque for 100 miles or more in July.

Major POWELL. It varies from year to year, and sometimes the flood lasts one or two months. It comes in part from the melting of the snows as well as from rains.

Mr. LANHAM. Have you examined this bill, the subject-matter of which we are now considering?

Major POWELL. I read it some two or three weeks ago.

Mr. LANHAM. You perceive that its object is to have an inquiry and investigation into this question?

Major POWELL. Yes, sir.

Mr. LANHAM. From your knowledge of the situation, having been at this point, what do you think about the proposed measure?

Major POWELL. I always shrink from expressing opinions on matters of legislation, but I have no objection to saying as—

Mr. LANHAM. You may say what is the object and scope of it.

Major POWELL. I think the interests of the ancient settlers, as well as the interests of the later settlers, the old Spanish settlements and the American settlements alike demands some adjustment of the water rights in that region of country, and unless that is done all these lower settlements will be wiped out. I have no doubt that unless something is done to protect the water rights the lower settlements in the Mesilla Valley and El Paso Valley will all be wiped out. There can be no doubt about that at all. It will only take ten years to drive all the farming out of that country if the development of irrigation goes on as it has done in the last ten years.

Mr. HERBERT. I see that you have located these catch-basins on the Jemez and its tributaries.

Major POWELL. Yes, sir.

Mr. HERBERT. Will you give the approximate cost of location of these catch-basins?

Major POWELL. That has been published in an investigation of two committees, and I can only give it from memory. This has all been published. I think \$450,000 for six reservoir dams.

Mr. HERBERT. In all cases where I ask for figures, if you do not remember exactly, you can afterwards insert them, as it is impossible for a man to remember everything. You can put definite answers when you come to revise your evidence as taken by the stenographer.

Major POWELL. Do you want me to give an estimate now?

Mr. HERBERT. Yes, sir.

Major POWELL. You see there are six dams. This one here is the Valle Grande; that reservoir will hold 69,000 acre-feet of water. This one here will hold about 23,000 acre-feet of water; it is the Valle San Antonio. The Rio Cebolla Reservoir will hold 16,000 acre-feet of water. This one (Wilson's Ranch) will hold 28,000 acre-feet of water. This one will hold 9,000, and this one nearly 10,000 acre-feet of water. Making in all about 155,000 acre-feet. The cost of that will be about \$450,000 for the construction of these dams, less than \$3 per acre-foot. But in addition to that there is to be a diverting dam below and a canal to be constructed. These reservoirs will not hold all the water. The survey is yet incomplete, as our men were driven away on account of smallpox breaking out in the settlement. Thirty or forty more reservoir sites are known. There is no difficulty in storing all the water, and the country lies in such a manner that the dams can be built at a small cost.

Mr. HERBERT. If a sufficient number of catch-basins were con-

structed to store all the water, would it irrigate all the irrigable lands on the Jemez and all the tributaries down to the Rio Grande? Could it all be used profitably on the lands before you get to the mouth of the Jemez?

Major POWELL. Yes, sir; the lands immediately along the lower Jemez are sands. The waters can not be used immediately along the Jemez to advantage, because they are lost in the sands. The chief body of land that would be irrigated is the mesa which lies 100 feet or more above Bernalillo and Albuquerque, all down here [illustrating on map].

Mr. HERBERT. How wide is that mesa?

Major POWELL. It is from 5 to 20 miles in width in different places.

Mr. HERBERT. Could all the waters be used?

Major POWELL. They can all be used there. These are townships. I have selected them all along here. There is the Rio Grande. Here is Albuquerque. Bernalillo is here. On this mesa all these townships can be irrigated. There is a great deal more land than there is water to serve.

Mr. HERBERT. Is that the case with all the other tributaries of the Rio Grande above there?

Major POWELL. Yes, sir; it is the same thing.

Mr. HERBERT. That there is more land than there is water to serve it if the water was all cut off and scientifically and judiciously stored?

Major POWELL. Yes, sir.

Mr. HERBERT. Still there would be irrigation as far as Albuquerque?

Major POWELL. Yes, sir.

Mr. HERBERT. So the problem is to secure an equal and equitable distribution of water?

Major POWELL. Yes, sir.

Mr. HERBERT. Among the inhabitants here and below?

Major POWELL. Yes, sir.

Mr. HERBERT. I do not know whether I have asked you, but if not, I will ask you to put in your answers an estimate of the percentage of water that is evaporated as the water flows from Albuquerque down to El Paso both by evaporation and absorption in the soil.

Major POWELL. That amounts to the same thing.

Mr. HERBERT. It is, of course, the same thing, as it is lost. It is both lost by evaporation from the surface and evaporation from the soil.

Major POWELL. That is a very complex question, and one in which myself and two or three men in the Survey have been at work for several years. In over one-half of the area of the arid region all the waters are evaporated. In over one-half of the area of the arid region there is no water that runs to the sea. There are many streams outside of the great basins which flow down, like the Box Elder, that have at their heads an abundance of water, but which flow down and are lost in the sands by being all evaporated.

The CHAIRMAN. Is it not owing in a great measure to the absorption in the sand?

Major POWELL. That means it is ultimately evaporated.

The CHAIRMAN. The term "evaporation" includes the other.

Major POWELL. Yes, sir; it goes into the sands and permeates and saturates the sands, and the sands themselves are agencies for evaporation greater than the water surface. If you keep the sand at the sur-

face saturated with water, you subdivide that surface into millions of minute facets. For every grain of sand there is a surface for evaporation, and the heat striking that surface evaporates the water much faster than from the surface of a lake; so the evaporation from the sands is greater than the evaporation from a water surface. It is a difficult question, and I am glad you brought the point out. It is a very important point. There was a narrow lake along the course of the stream with a rock bottom. If there is sand valley below several miles in width which is overflowed, all this water will be evaporated and lost.

The CHAIRMAN. You have been in the Colorado River Desert?

Major POWELL. Yes, sir.

The CHAIRMAN. You know there are points in the Colorado River Desert where the elevation is below the sea level?

Major POWELL. Yes, sir.

The CHAIRMAN. How far do you have to sink at those points until you get to water?

Major POWELL. I do not know.

The CHAIRMAN. I have seen it along the railroad, where they did not have to go more than a dozen feet at the stations until they got to water. You strike water within a dozen feet of the surface.

Major POWELL. The great desert of America is in southern Colorado.

The CHAIRMAN. There is a flood of water within 12 feet of the surface where the surface is below the sea level.

Mr. HERBERT. Do you remember the length of the canal you have surveyed from that point where it debouches from the river?

Major POWELL. About 25 miles.

Mr. HERBERT. What is the size of the canal and the width?

Major POWELL. I have not planned it.

Mr. HERBERT. Have you examined the soil there sufficiently to be able to say it is good soil for a canal?

Major POWELL. It is rather difficult soil.

Mr. HERBERT. Would it be necessary to line it at all to keep the water from sinking?

Major POWELL. My opinion is there will be a short distance over a salt basin for a mile or two where it will be necessary to—

Mr. HERBERT. To pave—

Major POWELL. Iron perhaps would be better. The canal part is not yet planned. It would have been but for the smallpox, which prevented our men from finishing the work.

Mr. HERBERT. So you can not make a definite estimate of the cost until you make a more definite survey?

Major POWELL. No, sir.

I suppose you would prefer now to have Major Mills go on?

The CHAIRMAN. We are very much obliged to you, Major Powell.

Mr. LANHAM. I will be glad for Major Mills to finish his statement which he began the other day, if Major Powell is through.

STATEMENT OF MAJ. ANSON MILLS—continued.

Mr. CHAIRMAN AND GENTLEMEN OF THE COMMITTEE: I will resume where I left off the other day, which I believe was on the subject of the railroads.

Mr. LANHAM. Here is a map which has been made showing these railroads—the Atchison, Topeka and Santa Fe and the Southern Pacific.

Major MILLS. They do not show as plainly as they do on this. The Atchison, Topeka and Santa Fe road will have to be removed the whole length of the lake.

Mr. HERBERT. How many miles?

Major MILLS. It will be about 18 miles, including the approach from El Paso. Its bed now lies below the proposed surface of the water, and there comes the greatest difficulty of construction. The estimates for this change are about \$400,000. There is no question but what this road will have, in the near future, to leave its present bed, because the river is now changing to the left bank, and will carry it away in a few years if there are any high floods.

Mr. HERBERT. You do not mention the Southern Pacific.

Major MILLS. I will proceed to do that. I want first to explain the difficulties of the Atchison, Topeka and Santa Fe, which do not apply to the other road. The Atchison, Topeka and Santa Fe has a maximum grade of one-half of 1 per cent, which is 26 feet per mile. It would be rather arbitrary to force them to change their grade. The difficulty is in getting the elevation over the water in the lake from the depot in the city to the lower dam site. The lower dam site is in every other respect much the best, and it would probably cost only two-thirds or perhaps one-half of the estimate for the upper site, the upper site being estimated at \$300,000. The lower site would probably cost \$150,000 to \$200,000; but the railroad engineer preferred to make his estimates on the upper site, because he saw no serious difficulty in getting the Atchison, Topeka and Santa Fe road to that elevation. There are many advantages in the lower site, one being that one end is in Mexico; another, it is nearer the fields to be irrigated, and the expensive part of the canals, etc. To irrigate the land would be much shorter—about 2 miles shorter. In my report I have suggested a method of overcoming this difficulty by running up a ravine near the river about a mile, and thus get the road above the waters before it reaches the lake. I think that is perfectly feasible, and I have consulted with railroad engineers in regard to it. An engineer of the Atchison, Topeka and Santa Fe road pronounced it perfectly practicable.

Mr. LANHAM. Here is your report, if you have occasion to use it.

Major MILLS. Thank you, sir. I think a railroad requires a distance of about half a mile of comparatively level grade to depart from their depot, so that we could not force them to take a maximum grade to start from the depot. To the lower site they have got about a mile and a half to gain 50 feet, because the depot is above the level of the water. If that is practicable, the lower dam site will no doubt be preferred. I believe I stated the estimate approximately. I can give you the exact figures.

Mr. LANHAM. That is all given in your report there?

Major MILLS. It will cost \$385,299 for moving the Santa Fe road.

Mr. HERBERT. Does that include the grading and locating them upon any route?

Major MILLS. It includes every cost that will be encountered in making the change, using new iron because it was concluded it would cost more to change the old without interrupting traffic than to put down the new iron.

Mr. HERBERT. Has the engineer or have any of the authorities concurred in that estimate as being correct?

Major MILLS. No, sir; we have not felt authorized to submit the matter to them. But Mr. Follett is an engineer who has been doing work for the Atchison, Topeka and Santa Fe road for many years, and he pronounces the grade as practicable. The Southern Pacific road, which crosses the Rio Grande just below the upper site, it will be necessary to move a distance of about 5 miles; but there is no difficulty about the grade, because their maximum is just twice that of the Santa Fe, or 52 feet to the mile, which allows them readily to get over the lake. The estimate for moving that road is \$204,591. This is the plan for the location of the upper dam site [exhibiting same]. It gives the soundings for the bed rock and the contour lines with elevations, etc. The members of the committee can look at it if they desire to do so.

This map represents a cross section of the river at the soundings for bed rock and the level of the water at the time the soundings were taken. These iron pipes on either side represent six 48-inch cast-iron pipes which will be placed through the dam a little above the level of the water as it now stands, for relief in case of floods or any obstruction that might come in the waste ways. These 48-inch pipes would carry with the pressure above, in case the lake was full, all the water the river would carry below without disturbing the boundary lines. This map represents a cross section of the proposed masonry dam proposed to be constructed on the most approved scientific principles and supposed to be perfectly safe. This [illustrating] is a plan of the river at the lower site.

Mr. HERBERT. Who is the author of this plan of dam; yourself?

Major MILLS. No, sir; it is taken from this book on masonry dams, by Mr. Wedgeman. In this book there are eight or ten different profiles of types of dams by different engineers.

Mr. HERBERT. It is from some gentleman who is an authority?

Major MILLS. Yes, sir; this gentleman is considered the best authority on the subject of masonry of dams. There are many theoretical profiles here, and Mr. Follett selected that of Mr. Alphonso Ftoley as the one he thought best adapted to this particular dam. Now, in regard to safety, Mr. Herbert asked me the other day what effect the breaking of this dam would have upon the city of El Paso. There is no question but what it would utterly destroy it. But I wish to call attention here to the history of some of the most important dams in the world. Here is one they call the Almanza Dam, in Spain. It is 65 feet high, which happens to be just the height of the one we propose. It has been standing three hundred years. The masonry of that dam was built three hundred years ago.

Mr. HEBBERT. Was it constructed by the Moors?

Major MILLS. I do not know. It was constructed in 1579 to 1594.

Mr. HERBERT. That is immaterial and it does not matter.

Major MILLS. Here is the Alicante Dam, which has also been in existence three hundred years. It has a height of 135 feet, which is twice the height of ours. This is considered a high authority; I brought it here for the use of any members of the committee who choose to refer to it. It is considered, I believe, the very highest authority in the world now. It gives the dimensions of a proposed dam 270 feet high, called the Quaker Bridge Dam, in the Croton Valley, New York.

Mr. HERBERT. What kind of foundation have you there?

Major MILLS. We have sounded there as thoroughly as possible and

we find a solid rock foundation. We have had the best sounding rods possible, and we have found what is almost positive indications of solid rock—granite and limestone.

Mr. LANHAM. How long have you lived in that country? I wish you would tell the committee what you know in reference to the history of that river, Major.

Major MILLS. I went to El Paso in 1858 with the parties projecting the Memphis, El Paso and Pacific Railroad; made the first survey of the town of El Paso that was ever made. I was occupied until the breaking out of the war; principally these years in surveying lands in these valleys of Mesilla and El Paso.

Mr. LANHAM. I wish you would tell what you know of the conditions of the river there during that period and its present condition, so that the committee may have a general understanding of it.

Major MILLS. It is almost incredible the size that river attains in seasons of high flood. I have seen the river when it appeared to carry as much water as the Mississippi. Of course it could not be so. I was in El Paso in July, 1884, and the river was then a raging torrent and carried away its banks and shifted its bed in some places 3 miles laterally and 10 or 15 miles longitudinally—lengthwise.

Mr. LANHAM. It destroyed a portion of the railroads below there—the Texas Pacific and the Southern Pacific, did it not?

Major MILLS. It carried away 15 miles of the Galveston, Houston and San Antonio Railroad, and they never found some of the iron. One tract of land, embracing over 5,000 acres, was left on the Mexican side of the river, yet according to the treaties it is claimed to be in Texas. I can not conceive it possible—of course all things are possible—there is a limit to everything; but I think they will have to build a great many reservoirs on the head waters of the Rio Grande if it carries as much water as it did in 1884 to prevent getting a great supply for the lake after the first filling, because while it will take a year to fill the lake on the first building of the dam the greater portion of that will be held there permanently; for the reservoir on top being but 10 feet deep contains but 200,000 acre-feet of water out of 500,000 acre-feet capacity of the lake. So we will only have to replace after the first filling 200,000 acre-feet at most annually in the 10 feet top of the lake. Of course it is possible, if they build these vast dams and reservoirs above, to deplete it entirely, and more probably in dry seasons, such seasons as last year was; but this 200,000 acre-feet of reservoir would probably supply four or five times as much water as will be used annually in the next five or ten years in that valley.

Mr. LANHAM. How much valuable land would you say in the Rio Grande Valley below El Paso would be affected by these dry conditions?

Major MILLS. That would otherwise be cultivated?

Mr. LANHAM. Yes, sir.

Major MILLS. I think there is on the Mexican side about 40,000 acres that would be cultivated if there was water. On the Texas side there are about 25,000 acres that would be cultivated if there was sufficient water; yet if this dam was built and it was filled there could be 100,000 acres cultivated on either side by high line ditches taken from a 50-foot altitude in the lake.

The CHAIRMAN. I understand you to say the capacity of the dam would be 500,000 acre-feet and 200,000 would be ordinarily sufficient for what purposes? For irrigation?

Major MILLS. No, sir. Understand me, the proposition is to take the main ditches from the lake at a height of 50 feet above the present level of the river; there will be no water taken out below that level as a rule for irrigation, and the reservoir will consist of only 10 feet on top.

The CHAIRMAN. The reservoir portion will be above 200,000 acre-feet, and there will be this reserve of 300,000 feet that could be utilized for increasing the volume of the river below?

Major MILLS. Yes, sir; and that is one object in putting in 48-inch pipes, so that the water would be available at a lower level than at the top of the dam if a dry season should come. It will be available for the land that lies below that level, but the higher lands could not be irrigated from that lower part of the reservoir.

Mr. HERBERT. Do I understand you to say there will be only about 200,000 acre-feet which you expect to utilize in irrigation?

Major MILLS. That is the plan; but in case of dry seasons so the lake would not be filled, then we have pipes at the bottom by which we can drain the lake lower if necessary.

Mr. HERBERT. I understood the pipes on the bottom would not carry water on the same lands; they would be of a different altitude.

Major MILLS. Yes, sir; but they will be 20 feet above any ditches now in existence at El Paso.

Mr. HERBERT. If this plan be carried out, do you propose to take all the water from this lake by iron pipes and convey it directly to the fields you would irrigate, or do you propose to let it run off into the bed of the river below and waste as it goes down?

Major MILLS. We have developed no particular plan.

Mr. HERBERT. What would you say in regard to that?

Major MILLS. I have a theory of carrying all to be used for irrigation by high land canals, because there would be less absorption than in the sands. As you get on high land the soil is better calculated to prevent percolation.

Mr. HERBERT. Suppose you had that lake constructed, had it full of water and turned it off to fill this river bed below in a dry season; how far would it run, and how long would it run—would it run all the way down and irrigate all the lands on each side by the ditches that have been heretofore used down as far as Presidio?

Major MILLS. No, sir. Ninety miles below El Paso the gorge commences again, and there are no lands below 90 miles that could be irrigated.

Mr. HERBERT. Would it be sufficient to irrigate the land on both sides of the river that has been heretofore cultivated?

Major MILLS. It may be utilized that way, but it would not be economical. Naturally both sides would seek to use the water in the high line canals, which would be less expensive, and there would be no more ditches taken from the bed of the river, and the water in the river would only be used for stock and domestic purposes.

Mr. HERBERT. Do you think it would be wise to let the water run from this reservoir to fill the channel of that stream for 90 miles?

Major MILLS. No, sir; not to fill the channel; only to maintain a flow.

Mr. HERBERT. Then your scheme really contemplates a system of ditches and iron pipes conveying the water directly from the lake that you propose to construct to the land on either side—on the Mexican side and the Texas side?

Major MILLS. Yes, sir; in ditches. I never contemplated iron pipes.

Mr. HERBERT. You would only leave water in the stream which the stock could drink?

Major MILLS. Yes, sir; a slight flow would probably be maintained from seepage and overflow in extended irrigation.

Mr. HERBERT. That is the proposition?

Major MILLS. Yes, sir.

Mr. HERBERT. In the event that this scheme is carried out there would be no Rio Grande River at all; it would be simply these pipes?

Major MILLS. Yes, sir; I think it would be better to let it run off in these canals, as far as practicable, should water become very scarce, but a small constant stream in the channel would neither overflow nor waste much water in this 90 miles.

Mr. HERBERT. That is what this scheme really means?

Major MILLS. The primary object of this scheme was to correct the boundary line.

Mr. HERBERT. There would be no river and boundary, because the water is conveyed in these canals and the channel of the river may stand as a definite line as fixed by marking the boundaries?

Major MILLS. Yes, sir; either entirely dry or with a small current.

The CHAIRMAN. In this limit of 90 miles below El Paso down to the gorge what arroyos come into the river from either side?

Major MILLS. None whatever that carry water except such as come from heavy rains, when the water from the canyons flows into the river, which generally ceases within forty-eight hours after the rain.

The CHAIRMAN. There are no arroyos?

Major MILLS. No, sir; no water runs in, except sometimes in hard rains, when there is something in the nature of a so-called cloud-burst.

Mr. HERBERT. When is the rainy season?

Major MILLS. About El Paso the rainy season is in July and August.

Mr. HERBERT. Too late for the crops?

Major MILLS. Corn would dry up in twenty days after the heaviest rain, the evaporation is so great.

Mr. HERBERT. Any rains at any time except in July and August?

Major MILLS. There are slight rains in the winter.

The CHAIRMAN. Do you understand that they distinguish between the Sonora rains?

Mr. HERBERT. These are the Sonora rains.

The CHAIRMAN. In all Arizona, New Mexico, and Colorado they have this rain. It is especially so on the Pacific coast. Did you ever make any estimate of the amount of land that would be irrigated by the 200,000 acre-feet of water?

Major MILLS. No, sir. I am not very well acquainted with the amount of water required to irrigate an acre of land, but I consider that 12 inches is sufficient.

The CHAIRMAN. Major Powell said this morning that 1 acre-foot of water would irrigate 1 acre of land.

Mr. HERBERT. That means, of course, without any evaporation?

Major MILLS. Yes, sir; that would be so. I believe I spoke of the evaporation of the surface of the lake.

Mr. HERBERT. That is a point I want—

Major MILLS. Major Powell has a much better idea of the evaporation, as I have not been in the business so long. I discovered the evapora-

tion last year would be about 6 or 7 feet from the surface of the water in the pools in which we took observations after the river was dry, and the narrow channel when it flowed. What it would be in a lake like that is something I do not know about; I have not been able to find anything in books about it. Whether the evaporation would be the same in the middle of the lake as at its borders, where the hot, dry air strikes it, is something of which I am unable to give an opinion.

Mr. HERBERT. Will you make a calculation, if you have not already made it, and append it to your answers when you shall correct them, showing what would be the size of the best iron pipes necessary to convey this water from this lake so as to irrigate for 90 miles below; the probable cost of buying and laying that pipe and constructing the necessary conduits to the land?

Major MILLS. We have estimated about the size of the pipes to convey a certain amount of water through the dam, but I do not think it would be necessary or even practicable to go to the expense of putting iron pipes—

Mr. HERBERT. I understood you to say you thought that would be best.

Major MILLS. Then I misunderstood your question. We put these iron pipes through the dam—

Mr. HERBERT. I understood from Major Powell that the land below here was very sandy, and the water was evaporated very rapidly, and would be absorbed from near El Paso down below.

Major MILLS. That is very true in the great overflows.

Mr. HERBERT. I understood you to say that if the water was turned into the bed of the river the greater portion of it would sink, and you could not irrigate these lands for 90 miles below.

Major MILLS. No; but I said the altitude of the outlets in the dam was 50 feet above the level of the city, with a fall of 10 feet between the dam and city, which would make them 60 feet above the valley, which would throw the canal back on the higher mesas, or what you might call the hardpan land.

Mr. HERBERT. Are they clay?

Major MILLS. They are what we call "adobe dirt." It is not sand, but it is solid and becomes almost impervious to water.

Mr. HERBERT. And you think it would not be necessary to use iron pipes?

Major MILLS. No, sir; the great expense would make it impracticable to do so, in my opinion.

Mr. HERBERT. The evaporation, then, would be principally evaporation through the air?

Major MILLS. Yes, sir.

Mr. HERBERT. And not evaporation through the soil?

Major MILLS. No, sir.

Mr. HERBERT. Can you find that same land all the way down?

Major MILLS. We will have arroyos where there is sand, where I presume it will be cheaper to have a flume of wood than to go to the expense of large iron pipes.

Mr. HERBERT. Are there a good many arroyos?

Major MILLS. Yes, sir.

Mr. HERBERT. What proportion of the distance would it occupy?

Major MILLS. Probably one-twentieth for the first 5 miles down, and after that it would be a less proportion. You understand that the aver-

age fall of that river in the valley of El Paso is 4 feet to the mile. If these canals are built large and reasonably straight, they need not have more than 1-foot fall for every mile, so that in going down 90 miles they will be three times 90 feet above the bed of the river, plus 50 feet the height taken, or 320 feet above the river at the lower end of the valley.

Mr. HERBERT. Is the configuration of the soil there such as to enable you to always get the altitude you want without cost?

Major MILLS. There will be cost, of course, but not extraordinary.

Mr. HERBERT. I wish to get at—by some calculation as near as you can make it—what would be the net cost of conveying the water along in these canals below so as to irrigate from the lake the lands down to Presidio. Of course it would depend entirely upon the system you adopt, but I would like to get some idea of it.

Mr. LANHAM. Is it proposed to take all the water that would be used through these ditches? My understanding has been that it would be used also for the purpose of still maintaining the flow in the stream below.

Major MILLS. That question was brought out by a question of Mr. Herbert's, and I agree with him in his ideas. It never occurred to me before. For a distance of 90 miles below the dam it would be much better to become perfectly dry should there ever be any great scarcity of water, but ordinarily I don't think these ditches would carry the mean annual flow.

Mr. LANHAM. It may be flooded—

Major MILLS. But the floods never come to any great extent except in the spring, from April to the last of July; then by irrigation or otherwise this reservoir of 10 feet would be depleted, and at the highest flood it would take a month or six weeks to fill that reservoir, and seeing a large flood coming down we could fill these ditches and allow a small current in the channel to carry it off so as to be prepared for the coming of another flood.

The CHAIRMAN. What do you call the valley of El Paso?

Major MILLS. The valley 90 miles below El Paso [illustrating].

The CHAIRMAN. Does it include this part here [illustrating]?

Major MILLS. No, sir.

The CHAIRMAN. What is this?

Major MILLS. The Mesilla Valley.

Mr. HERBERT. I understood that the object of this dam was to keep a steady flow in the bed of the river below.

Mr. LANHAM. To make the boundary line.

Major MILLS. If they have an abundant flow of water in the river it could not be carried very readily outside the river's bed.

Mr. HERBERT. By iron pipes?

Major MILLS. The river would cut no figure in it at all then, when there should be great scarcity of water, and all should be carried in canals; but I don't think that would be often the case.

Mr. LANHAM. If you maintain the water in the river channel, that channel could be controlled to such an extent it could be made a permanent boundary line, could it not?

Major MILLS. There is no question about that. It might be as Mr. Herbert said that during an overflow when there is a great surplus we could let it run into the river. There is no doubt if this dam is built with this reservoir we could control the floods so there can not be any change in the river at all. It must be remembered that this water

instead of having silt in suspension would be perfectly clear; and it is said by those who have given a good deal of study to the question that this silt in suspension is what causes change in rivers, by depositing the silt on one bank and cutting it from another. So when the river enters the head of the lake it may have silt in suspension, but after half a mile in comparatively still water it would be precipitated and make the water perfectly clear.

Mr. HERBERT. What is the percentage of silt?

Major MILLS. It runs from 2 per cent to a quarter of 1 per cent. It is higher when the river is low; the flood waters contain less. When these little streams in New Mexico become flooded of course it increases it.

The CHAIRMAN. It is said that at the mouth of the Mississippi River the proportion of solid matter at low water is greater than it is at high water.

Mr. HERBERT. To an unscientific man that appears to be a peculiar proposition.

Major MILLS. It may not be true for all rivers, but it was so with the Rio Grande for the last year.

Mr. LANHAM. Do you know anything of the extent of the farming operations on both sides of the river below El Paso?

Major MILLS. I do not know whether I made that statement in my former appearance here or not. This is approximate, but it will give you a tolerably good idea of the acreage. The land in cultivation now on this side of the river—that is not Mexico—in the El Paso Valley is about 15,000 acres.

Mr. LANHAM. You said that a while ago. What is the character of the products there?

Major MILLS. The products are various—fruits of nearly all kinds. The production of grapes is large. They produce peaches, apricots, pears, and apples; all sorts of vegetables; and they raise wheat, barley, oats, corn, and onions, all in great abundance.

Mr. LANHAM. Alfalfa?

Major MILLS. They raise three to four crops of alfalfa in the same season. The season is very long, beginning early and ending late.

Mr. LANHAM. Do they count on the rainfall as an element or factor in the cultivation of their crops?

Major MILLS. Not any further than when the rain comes it does away with immediate irrigation, but without irrigation it would be utterly useless to plant anything.

Mr. LANHAM. If this dry condition should continue I want to know what would be the fate of this country?

Major MILLS. I do not see any hope for them. There are in the El Paso Valley some fifty thousand people. In the Mesilla Valley there are probably eight or ten thousand, and for these 60,000 people I do not see any other result than to abandon everything in the line of agriculture unless some remedy is provided for this depletion of the river.

Mr. HERBERT. Do these eight or ten thousand people in the Mesilla Valley occupy the site of the proposed lake?

Major MILLS. No, sir; not a hundred of them.

Mr. LANHAM. He stated the other day there was about a thousand acres in cultivation that would be submerged by this proposed lake.

Mr. HANSBROUGH. There are only a few people there.

Major MILLS. Only a few.

Mr. HANSBROUGH. The 60,000 people are not wholly dependent upon agriculture?

Major MILLS. No, sir; but the greater portion of them are. Those who are not dependent upon agriculture will be dependent upon the support of the agriculturist to a great extent—those who are engaged in merchandise and other pursuits. You understand as well as I that if the pursuit of agriculture is stopped it will also stop a great portion of other pursuits by loss of the patronage of the agriculturist.

Mr. LANHAM. Does any member of the committee desire to ask Major Mills any further question? He has been examining this question for a long while and is very conversant with it.

The CHAIRMAN. You stated a while ago that about 60,000 people were residents of El Paso Valley.

Major MILLS. No, sir; fifty thousand.

The CHAIRMAN. And how many in the Mesilla Valley?

Major MILLS. Ten thousand. In the El Paso Valley they are equally divided between Mexicans and Americans.

The CHAIRMAN. How far below this point here does this contraction at Fort Quitman continue [illustrating]?

Major MILLS. It continues down to the Concho, a confluent from Mexico. Then there is a small valley right here at Presidio del Norte [illustrating].

The CHAIRMAN. Where does the Pecos come in?

Major MILLS. Below that point there. Then Devils River is here. Both the Devils River and the Pecos. This makes quite a fine stream below.

The CHAIRMAN. They have no trouble in the river after the Pecos comes in?

Major MILLS. No, sir.

Mr. HANSBROUGH. The rainfall is heavier near the sea.

Major MILLS. This confluent here, the Concho, arises in the high mountains of Mexico, similar to the Rio Grande in Colorado, and it is a living stream.

Major POWELL. I would like to say just one word here. The plans for construction, I would say, are all of them submitted by competent engineers of the Geological Survey, and then I have a board of revision, and when we may recommend anything to Congress this board of revision takes it all up and rediscusses it before the time for publication, so what I have now presented is only preliminary and not final.

Mr. HERBERT. This report made by Major Mills not having been published, of course we would like to include it in the testimony.

Major POWELL. This report of Major Mills I shall publish as part of my report.

Thereupon the committee adjourned.

APPENDIX D.

[House Report No. 1008, Fiftieth Congress, first session.]

INTERNATIONAL COMMISSION WITH MEXICO.

Mr. Hitt, from the Committee on Foreign Affairs, submitted the following report:

The Committee on Foreign Affairs, to whom was referred the joint resolution (H. Res. 112) requesting the President of the United States

to negotiate with the Government of Mexico for the creation of an international commission to determine, according to the rules of the Washington convention of November 12, 1884, all questions touching the boundary line between the United States and Mexico where it follows the bed of the Rio Grande and Colorado rivers, have had the same under consideration, and respectfully report the same back and recommend its adoption.

The Rio Grande River, flowing between the United States and Mexico, is a wide, shallow stream, with a changing, uncertain channel. By the treaty of Guadalupe Hidalgo, concluded February 2, 1848, after the war with Mexico, the boundary line from the mouth of the Rio Grande was declared to be "up the middle of that river, following the deepest channel, where it has more than one." The same words "up the middle of that river" are repeated in the treaty with Mexico of December 30, 1853.

A survey of the boundary was made under the treaty and the actual boundary was then what was the middle of the river. Since that time it has shifted its channels so often and so far, in some cases gradually, in others abruptly and by cut-offs, that no man knows accurately where the boundary is to-day. The channel will sometimes move slowly by accretion on one side and erosion on the other. Sometimes the stream will suddenly cut a new channel, abandoning the old ones altogether, and in a single day by a cut-off, a tract or "banco" of a hundred acres will be found to be on the other side of the river.

These causes have produced uncertainty as to the boundary, and this encourages smuggling, which is always carried on more or less on the border. When a man smuggles from a banco it is almost impossible to catch and convict him. No surveys are made nor official records kept of the time and place of cut-off changes, and no one can tell with accuracy the extent of a cut-off. The bed of the old channel is the boundary, though it may be long since dry. There are sometimes two or three old beds, and it is hard to tell where is the middle of the old bed contemplated by the treaty. At the last term of the United States district court at Brownsville, the most noted smuggling case was lost by the Government for want of that accurate knowledge that would satisfy the court. Some bancos increase by deposit; some wear away till they are entirely swept off.

Questions of ownership and of jurisdiction arose long ago under the treaty of Guadalupe Hidalgo.

In 1856 Attorney-General Cushing discussed the subject with his characteristic learning and ability in an opinion dated November 11, which rests upon and reasserts the long-established principle of Roman law.

Says Mr. Cushing:

When a river is the line of arcifinious boundary between two nations, its natural channel so continues notwithstanding any changes of its course by accretion or decrection of either bank; but if the course be changed abruptly into a new bed by irruption or avulsion, then the [deserted] river bed becomes the boundary.

In order to remove all doubt from this subject, Secretary Frelinghuysen signed a convention with Señor Romero, minister of Mexico, November 12, 1884, in which was laid down a body of rules which are in accordance with the doctrine of the civil law for determining questions concerning the dividing line, the middle of the channel of the Rio Grande and Rio Colorado—

to avoid difficulties which may arise through the changes of channel to which those rivers are subject through the operation of natural forces.

The first two rules laid down were: The dividing lines shall forever be that described in the aforesaid treaty and follow the center of the normal channel of the rivers named, notwithstanding any alterations in the banks or in the course of those rivers, provided that such alterations be effected by natural causes through the slow and gradual erosion and deposit of alluvium, and not by the abandonment of an existing river-bed and the opening of a new one.

Any other change wrought by the force of the current, whether by the cutting of a new bed or when there is more than one channel by the deepening of another channel than that which marked the boundary at the time of the survey made under the aforesaid treaty, shall produce no change in the dividing line as fixed by the surveys of the international boundary commissions in 1852; but the line then fixed shall continue to follow the middle of its original channel bed, even though this should "become wholly dry or be obstructed by deposits."

Other rules declared that artificial change of channel should not affect the line, nor should rights of property be disturbed by the channel changes above described.

But this convention provided no means for applying these rules to given cases. It declared that the boundary as fixed in 1852 should continue in the middle of the old bed, even when it becomes dry. But who is to determine where is the middle of the old bed? When there are two or three old beds how is it to be decided which was abandoned by the river before 1852, and which since? These bancos with their uncertain boundaries afford retreats for smugglers, thieves, kidnappers, murderers, and every class of criminals, as well as basis of supplies from which to carry on the operation free from interference by either Government. Liquors, tobacco, and all kinds of dutiable merchandise are taken there and smuggled into the United States as opportunity offers. The collector at Brownsville says:

The two inspectors at Santa Maria lately had positive information of 100 gallons of mescal in the Balsa banco ready to be brought over. They watched day and night for it, but could not catch it. While they were on one side they went out on the other, and was consumed at some big Christmas "bailes" (dances) about 15 miles in the country. That is one instance of smuggling known to the officers, who could not prevent it. I could give you a hundred.

If these nests could be broken up, smuggling would be greatly reduced. I think the only way to do it is to make a new treaty, defining the boundary between Mexico and the United States to be the channel of the Rio Grande, and giving to the United States and to the State of Texas both civil and criminal jurisdiction over the "bancos" or cut-offs on this side, ownership of the land to be settled by other provisions of the treaty, or courts provided for thereunder. This would enable the mounted inspectors to ride through and examine the bancos instead of going around on the outside and seeing nothing, besides making a saving in distance traveled of from 1 to 4 miles. The Texas cut-offs on the Mexican side should be left under the political jurisdiction of Mexico. All dutiable articles in either country should be made to pay duties as soon as they cross the main stream of the Rio Grande, and only then, and the officers of either side should have every facility to detect violations of law instead of, as now, being hampered by various obstacles of nature, aggravated by laws and treaties.

In view of this state of facts, the Secretary of State says:

It may be practicable to arrange with the Mexican Government for an international river commission, to apply the rule prescribed by the convention of 1884, the case arising; but as such an arrangement would not be effective without legislative provision for expenses, I would prefer to have some indication of the feeling of Congress in the premises before entering on any formal negotiation.

The Secretary then transmits the draft of this resolution.

The Secretary of the Treasury, upon being consulted by the Secretary of State on the question, replied:

In view of the difficulties constantly experienced in enforcing the revenue laws on the Mexican frontier, owing in a great measure to the present uncertainty as to the boundary line between the two countries, I concur in your suggestion for the appointment of an international river commission to apply the rule prescribed by the boundary convention of November 12, 1884.

Your committee, therefore, in view of the protection of the revenue, the prevention of crime, the maintenance of good order, and the preservation of international harmony, recommend the adoption of the joint resolution looking to the creation of a commission to determine all Rio Grande boundary questions.

APPENDIX E.

[House Report No. 490, Fifty-first Congress, first session.]

IRRIGATION OF ARID LANDS—INTERNATIONAL BOUNDARY—MEXICAN RELATIONS.

Mr. Lanham, from the Select Committee on Irrigation of Arid Lands, submitted the following report:

The Select Committee on Irrigation of Arid Lands in the United States, to whom was referred House bill No. 3924, entitled "A bill concerning the irrigation of arid lands in the valley of the Rio Grande River, the construction of a dam across said river at or near El Paso, Tex., for the storage of its waste waters, and for other purposes," have considered the same and respectfully report it to the House, with the recommendation that it do pass.

The reasons which commend this bill to legislative attention, the conditions which have given rise to its introduction, and the necessities which have brought about its consideration are substantially formulated in the preamble. (See copy of bill hereto attached.) The statements therein made have been affirmatively established. The investigation of the committee has been aided by the presence and testimony of gentlemen who are fully conversant with the facts, and have had ample opportunity for an actual observation of their existence; besides, documentary and historic evidence bearing upon the situation has been available, from which additional information, believed to be reliable and accurate, has been obtained.

It will be observed that the measure proposed is inceptive and initiatory in its character, contemplating in its terms no present, final, or conclusive legislation, carrying no appropriation, but reserving any ultimate proposition on the subject to be controlled by the future judgment and discretion of Congress after international consultation and methods for concert of action shall have been considered and devised. It is not expected that the remedies suggested for a solution of the troubles indicated can be rendered operative without the preliminary negotiation provided for shall be followed by appropriate and necessary legislation to carry them into effect. A mutual understanding and cooperation by and between the respective Governments concerned will be a necessary antecedent, and any practical results are contingent on the event that, after full conference shall be had and full investigation

shall be made, it shall be regarded expedient and of such importance as to warrant future authoritative and conjoint execution by the two countries. Accordingly the fourth section of the bill provides—

That the President is requested to communicate to Congress the result of said negotiation, together with his recommendation thereon, at the earliest practicable opportunity.

The committee are of the opinion that the issues involved are of such moment, the complications so embarrassing, the national and international interests so important, and the situation one of such gravity as to suggest the wisdom and propriety of the two Republics conferring and reasoning together, and inaugurating all suitable and possible measures for the conservation of that harmony and prosperity of their respective citizens and that amicable and orderly administration of their respective Governments so greatly to be desired, and yet so seriously menaced by the existence of the causes stated in the preamble. These difficulties will, it may be assumed, grow more serious and critical the longer the correctives are delayed, and it would seem to be the part of prudence to anticipate and provide against their consequences as far as it is possible to be done.

The Republic of Mexico is our near neighbor, separated from us, in part, by the Rio Grande River, for a distance of some 1,200 miles. With its twelve millions of people, with its developing resources and wonderful possibilities, with its invitation to and reception of American capital, with its great trunk-line railroads, practically extensions of ours, with its varied fields for our commerce and constant demand for our products, with all its multiplied relations to us, it is a neighbor with whom we shall always have to deal, and whom it is both our duty and policy to treat and cultivate in a neighborly way. There are many Mexicans who are citizens of the United States, enjoying all the immunities of such. They are to be found all along on our side of the Rio Grande. The treaty of Guadalupe Hidalgo in its eighth and ninth articles made especial provision for such citizenship.

In a report relating to troubles on the Rio Grande, transmitted to the House of Representatives by the Secretary of War in 1878 (see Ex. Doc. No. 84, Forty-fifth Congress, second session), Colonel Hatch says:

The people are one and the same on the two sides of the river; although subjects and citizens of different nations, they are one in race and religion, and bound by the closest ties of interest and blood; their customs, habits, and traditions are the same, and there is hardly a family on the one side but is related by ties of blood or marriage with those on the other; hence, when you touch one you touch all, and when one is hurt all feel it. * * * One [trouble] which must be looked for sooner or later is in connection with the water taken from the Rio Grande for irrigation. As soon as the attempt is made to largely extend cultivation in this valley (there will not be enough water for all, and both sides have an equal right), from this troubles are certain to arise sooner or later, which may involve the two countries seriously.

In the report of the Board of Officers (see Ex. Doc. No. 93, Forty-fifth Congress, second session), March 16, 1878, is to be found the following statement:

The Rio Grande, at this season of the year even an insignificant stream, its channel often shifting and always erratic, but during the heats of summer sometimes dry, affords, by being directed into acequias on either bank, a scant and variable supply of water to the people of both nationalities, but is utterly insufficient to irrigate this extensive valley, where the yearly rainfall measures but a few inches. As time progresses and the country is opened by accessions to its population, sure to come—for it is a most fertile region and gloriously rewards the labor spent in irrigation—the question must grow in importance, and may occasion trouble beyond the reach of diplomacy to settle.

Time has verified in a great degree these prognostications, as will appear subsequently. The "accessions to the populations" have been rapidly made. A new and different citizenship has been attracted here and added to those residing in the valley at the time when these official reports were submitted. Energetic and progressive Americans have since made their homes and invested their capital here, while substantial and material development by the Mexicans is also observable. Our people along the border are thrown in daily contact with the people of Mexico. Notwithstanding our covenants of amity, it has been not only difficult but at times impossible to prevent outbreaks and conflicts on the Mexican frontier from various causes, despite the efforts of good men in either country to maintain friendly relations. Depredations, reprisals, bloodshed, and retaliations have occasionally marked and marred the history of these border peoples. General Stanley, commanding the Department of Texas, in his official report, dated September 12, 1889 (see report of General Schofield to Secretary of War, 1889, p. 100), says:

Our relations with our Mexican neighbors upon the long line of the Rio Grande have been kindly, although they are a good deal excited over what they deem the violation of their riparian rights, through our people taking all the water of the Rio Grande for the irrigation of the San Luis Valley, which leaves the Rio Grande a dry bed for 500 miles. The question is one that must be settled by the State Department, and thus far there has been no call for military force. The remedy for this water famine and consequent ruin to the inhabitants of the Rio Grande Valley must be found in storage reservoirs, so easy of construction, one in the canyon opposite Taos and the other in the canyon near and north of El Paso.

The Rio Grande is quite a long stream, being, with its meanders, some 2,000 miles in length. It rises in Colorado and is supplied from a number of tributaries in that State and northern New Mexico, the rainfall, and melting of the snow and ice. There are frequently vast accumulations of snow and ice in the deep canyons of that region during the long winters. If the snowfall be great and its melting accompanied by rains in the spring, the river becomes a raging torrent from about the first of April until July, carrying enormous quantities of water through its entire length. Much of this time it is wholly unused and unnecessary for irrigating purposes in either Colorado or upper New Mexico, and its flow is not only vastly more than is required for such purposes lower down the stream, but, because of its temporary superabundance, becomes really destructive. In such cases it goes on unused to the Gulf, carrying as waste that which, if it could be conserved for the seasons later on, would be precious indeed to the people along its course. If the snowfall in the mountains above be light, and its melting unaccompanied by rains, the water from the snow is in a great degree evaporated and the floods are less enormous.

The middle third of this river, say, from Albuquerque, N. Mex., to Presidio del Norte, Mexico, a distance of about 500 miles, has no important living confluent, and passes through an extremely arid belt, where the evaporation from a water surface is many times the rainfall annually; and in unusually dry seasons its history for the past forty years shows that it failed to carry a current for short periods during August or September on an average of about once in seven years. At and below Presidio del Norte it has living confluent from Mexico and Texas which maintain a constant flow to the Gulf of Mexico. Midway in this arid belt are the two large valleys of the river—Mesilla in New Mexico, and El Paso in Texas and Mexico—where agricultural pursuits have been maintained almost since prehistoric times, certainly and of record

for more than two centuries, essentially dependent on irrigation, the ordinary rainfall not being an important factor in the growth of crops.

Near and just above El Paso, Tex., the Rio Grande, or, rather, "the middle of that river, following the deepest channel" (treaty 1853), or "the center of the normal channel," etc. (convention 1884), becomes the international boundary of the United States of America and the Republic of Mexico. But for the last forty years the river has been so continuously changing its bed from one side of the valley to the other, more or less with each recurring flood, in many cases it being unknown whether caused by avulsion or gradual erosion and deposit, that it is frequently impossible to determine to which country the land on either bank of the river belongs in different localities and to great extents in area.

These floods have sometimes become devastating torrents, inundating the whole valleys for miles, cutting new channels, and sweeping everything before them. In 1842, in the El Paso Valley, the river changed its bed for a distance of 30 miles, and in some places 7 miles laterally. Hundreds of smaller changes have been made since. In 1884 it began moving back from the Mexican side at this point, and in a few months carried away 15 miles of the Southern Pacific Railroad, and threw a single body of over 5,000 acres of land on the south side of the river, although it is still claimed to be within the domain of Texas. This land was just above the Mexican town of San Ygnacio, and as the river left the town for miles, its people were compelled to take a canal from the river where it is entirely in Texas, and carry it for more than 3 miles over Texan soil, to irrigate their land and for domestic purposes. The situation is further well described in an able report submitted in the last Congress by the Hon. Mr. Hitt, of the Committee on Foreign Affairs, as follows:

It [Rio Grande] has shifted its channels so often and so far, in some cases gradually, in others abruptly and by cut-offs, that no man knows accurately where the boundary is to-day. Sometimes the stream will suddenly cut a new channel, abandoning the old ones altogether and in a single day, by a cut-off, a tract or "banco" of a hundred acres will be found to be on the other side of the river. These causes have produced uncertainty as to the boundary, and this encourages smuggling, which is always carried on more or less on the border. When a man smuggles from a "banco" it is almost impossible to catch and convict him. No surveys are made nor official records kept of the time and place of cut-off changes, and no one can tell with accuracy the extent of a cut-off. The bed of the old channel is the boundary, though it may be long since dry. There are sometimes two or three old beds, and it is hard to tell where is the middle of the old bed contemplated by the treaty.

At the last term of the United States district court at Brownsville the most noted case of smuggling was lost by the Government for want of that accurate knowledge that would satisfy the court. * * * These bancos with their uncertain boundaries afforded retreats for smugglers, thieves, kidnapers, murderers, and every class of criminals, as well as bases of supplies from which to carry on their operations, free from interference by either Government.

He concludes his report with a recommendation from the committee in favor of the creation of a boundary commission, "in view of the protection of the revenue, the prevention of crime, the maintenance of good order, and the preservation of international harmony."

Article 5 of the convention of 1884 between the two countries provides that rights of property in respect of lands which may have become separated through the creation of new channels shall not be affected thereby, but such lands shall continue to be under the jurisdiction of the country to which they previously belonged.

It is easy to be perceived how serious are the difficulties to both countries, in the adjustment of titles to land, the prevention of smuggling,

and the arrest and punishment of all kinds of criminals, on account of the confusion of boundary and doubtful jurisdiction which arise from the facts stated.

But a further complication has arisen in recent years, growing out of the fact that in Colorado and New Mexico a great number of irrigating ditches and canals have been taken from the Upper Rio Grande and its tributaries, resulting to a great degree in the absorption of the water before it reaches the point of international boundary. By reference to the fourth biennial report (pp. 287 to 325) of the State engineer of Colorado for 1887-88 it will be seen that more than three hundred ditches have been taken out in that State alone, while vast quantities of water have been and are being similarly appropriated in New Mexico. The result has been a great depletion of the flow of the river in the driest part of the year, July and August, when it is most needed. This has been so great for the last three years in the above-indicated middle third of the river's course as to almost entirely destroy the growing annuals, the younger vines and fruit trees, and, unless corrected in some way will finally eventuate in the total destruction of the agricultural interests of this entire section.

In 1888 the river was absolutely dry for over sixty days about August and September, and in 1889 it had no flow whatever from the 5th of August to the 20th of December, a period of one hundred and thirty-seven days. While this dearth of water may not be wholly imputed to the irrigating agencies and consumption of water by the people of Colorado and New Mexico—for it must be admitted that these seasons were dry, with little snow in the mountains—still there can be no doubt that they have materially contributed to that end, and will continue to do so in the future in an increasing ratio as the number of ditches multiply. It is stated by Major Powell, Director of the Geological Survey, as a reasonable probability, that within a comparatively short period, with the growing development of agricultural interests in the region of the Upper Rio Grande, the impounding, distribution, and utilization of the waters of that river and its tributaries after the manner already begun, there will be a wholly inadequate, if not utter absence of, supply of water in the stream below.

Such continued and serious dearth of water in the river has never been known before by those inhabitants of the valley who are and have been for many years best acquainted with its history and characteristics, and both Americans and Mexicans claim that the deprivation of their accustomed water supply is attributable to the action of the people of the United States in the localities mentioned. They further insist that the Rio Grande is an international stream, belonging not to Chihuahua or other Mexican States or to Texas and its people, but that an equal undivided one-half interest in it, with all its privileges, belongs to the United States of America and the Republic of Mexico, and that as such it is entitled to receive the care and attention of the respective Federal Governments.

The El Paso Valley extends from the pass at El Paso 90 miles below, and is from 4 to 10 miles wide. It contains about 200,000 acres of magnificent lands, situated about equally on the Mexican and Texan side of the river, that under proper and possible conditions could be reduced to a fine state of cultivation. There are now in this valley about 50,000 people, nearly equally divided between the two countries. They at present cultivate about 50,000 acres of land, which in fertility

is not surpassed on the continent. Here are grown fruits and vegetables of the rarest quality, with cereals of nearly every kind. Perhaps the best grapes in the world are produced here, and this vineyard-dotted valley, under proper auspices, can nowhere be equaled. Of many products the climate and soil afford more than one crop per year; there are numerous valuable farms and gardens, and the people have been heretofore prosperous. There are towns on either side of the river, some of which are centuries old. It would not be extravagant to say that this valley and these people represent values aggregating \$25,000,000.

These people claim vested rights in the water of the Rio Grande antedating even the written history of the country, of which they insist they are being unjustly deprived by those seeking to form new communities above them. They look with dismay on the manifest and "consequent ruin," described by General Stanley, which inevitably awaits them, if not already upon them, unless some solution of the water question can be found and the "water famine" averted. Their values will be dissipated, their valley depopulated, their homes abandoned, and their possessions useless unless some relief can be afforded and some remedy applied. Severe as these sacrifices may be, it is to be seriously apprehended that they will not peaceably be made.

If these be the facts, and such conditions as above described exist, is not the subject one that should challenge the thoughtful inquiry of Congress, and is it not worth the while and within the proper functions of our Government to take a step in time for promoting some authoritative investigation of the matter through the medium of international negotiation, looking to an ultimate application of any proper correctives? And is it not obvious that the sooner this is done the better it will be for the interests of both Governments?

Confronted as they were with these conditions, it was quite natural that both Americans and Mexicans in the El Paso Valley should take a lively interest in the discussion and discovery of some feasible and practicable remedy for and solution of their troubles. Much was thought, said, and written about it. Finally, Maj. Anson Mills, of the Tenth Cavalry, United States Army, who had lived along the Rio Grande before and since the war, and was familiar with the people and history of that part of the country, as well as the characteristics of the river, conceived the idea of impounding the torrential flow of the river in the Pass just above El Paso, where the channel is narrow and passes between the mountain walls on either side, and over a solid rock bottom by means of the construction of a dam about 60 feet high. In this way it is maintained that a vast lake or reservoir, 15 miles long by 7 miles wide, with immense storage capacity, can be created.

There is certainly a wonderful natural adaptation at this point for such a purpose, both in the basin and rim for a lake of such dimensions and the advantages afforded for the construction of a dam, one end of which to rest on the mountain wall on the Mexican side and the other on the American side. The project was submitted by Major Mills to the Secretary of State in December, 1888. By the approval of the Secretary of War he was detailed to make observations, and to act under the instructions and directions of the Director of the Geological Survey at this point. He has made full and exhaustive examination and submitted an elaborate report in the premises. He was assisted in the work by Señor Ygnacio Garfias, an accomplished and distinguished Mexican

engineer, who was detailed by his Government for that purpose, and whose judgment fully approves the plan. The Senate Committee on Irrigation, appointed at the last Congress, accompanied by Major Powell, of the Geological Survey, visited the locality last September, and also made considerable examination concerning the matter. Major Powell pronounces the plan feasible, and stated before your committee that the only remedy to be found was in such a storage of the water, expressing at the same time the apprehensions before mentioned with reference to the possible future consumption of the water near the sources of the river. The Select Committee on Irrigation and Reclamation of Arid Lands in the Senate have at this session considered and favorably reported a measure substantially the same as that here presented.

The following extract from a recent letter addressed to the writer of this report by the Hon. John G. Carlisle contains an admirable statement of the situation. He was at El Paso during the long period of drought mentioned, and was afforded an opportunity for personal observation of the conditions which there obtained. Believing that anything said on the subject by so eminent a man as the ex-Speaker can not fail to be of interest, a portion of his letter is here copied:

I had an opportunity last summer, while on a visit to Mexico, to investigate this matter to some extent, and became satisfied that the situation on that part of the river to which your bill relates was such as to demand the immediate and careful attention of both countries. The diversion of the water of the river in New Mexico and Colorado for irrigation purposes has practically destroyed during a large part of the year a very considerable section of it flowing between the two countries, and thus deprived the people on both banks of the use of the stream for any purpose whatever. Besides this the numerous changes that occur in the channel render it difficult, if not impossible, to determine precisely where the boundary line between the two countries is located. This is a source of constant irritation, and unless some remedy can be devised may ultimately produce serious disagreement between the two Governments.

The subject is an international one in both its aspects. Whether the people of Mexico can be lawfully deprived of the waters of the Rio Grande, as they would, if not diverted, naturally flow from that part of the stream within the United States, may be a disputed question; but there certainly is a moral obligation upon our part to cooperate with the Government of that country in such measures as may be necessary to prevent injury in the future. Of course, the question of boundary is one which equally concerns both Governments and must be settled, if at all, by their joint action.

As your bill proposes only to open negotiations upon the subject and leave final action to be taken hereafter when the results of the conference have been communicated, I think it ought to pass.

The preliminary investigation heretofore made by Major Mills and Mr. Garfias, representing both countries, leads to the conclusion and has demonstrated, so far as their concurrent judgment is concerned, that it is possible, by the construction of the dam before described, to solve both the water and boundary problems. The proposed dam, it is affirmed, can be built upon solid bed rock abutting on the solid-rock walls on the bluffs of the Pass, with a length of about 450 feet. It can be constructed upon the approved principles of modern masonry dams. The plan used in the preliminary survey was from the profile recommended by Mr. Alphonse Fteley for adoption in the building of the great Quaker Bridge Dam in the Croton River, New York, designed to be 270 feet high and 1,350 feet long, and is "Practical Profile No. 2" of "Wegman's Design and Construction of Masonry Dams," which is understood to be the best and latest authority on that subject.

It gives a historical description of some forty of the principal dams constructed throughout the world in the last three hundred years. It

describes the "Almanza Dam" in the Province of Albacete, Spain, which has successfully impounded water for three centuries. This is 67 feet high and 292 feet long. Another is the "Alicante Dam," also in Spain, which is 134 feet high and 190 feet long, which has had a safe and successful existence for about the same length of time. Most of the other dams described in this work are on a grander scale, but of more recent construction. The opinion seems to be sustained that masonry dams, if properly constructed, can be rendered absolutely safe and permanent.

The proposed reservoir or lake, it is maintained, can be supplied with a "by-wash" or "waste weir," 200 feet wide by 5 feet deep—that is, with its crest 5 feet below the crest of the dam—and through and over one of the solid-rock walls or banks of the river, having an easy outward slope for the passage of the waste waters in their descent to the channel of the river below, avoiding the shock or tremor of a perpendicular fall, injurious to masonry work. It is estimated that such a sized weir will pass all the waters in excess of the storage capacity between its crest and that of the dam proper, possible to come from any extended flood in the river.

To maintain a constant and uniform channel of the river below, when the surface of the lake may be below the crest of the by-wash, it is stated that six 48-inch cast-iron pipes may be placed through the masonry of the dam near its base, three on each side of the river, and that each of these pipes can be provided with valve gates, so arranged that one person can easily adjust one or all of them, to permit just the desired amount of water to pass through them from the lake. By this means it is claimed that there can be maintained a small stream of clear water, unburdened by silt, equal to the mean annual flow constantly each day in the year, the bed and channel of which could be permanently directed and controlled in such a manner as to fix and determine a boundary line of a living and permanent stream between the two countries for 200 miles below El Paso to the point where a sufficient water supply is afforded by confluent of the Rio Grande.

It is not intended in this report to discuss the scientific details of the proposition, but simply to submit a general and substantial statement. It may be said, however, that no essential feature of the project was overlooked or left unconsidered by the parties who made the preliminary investigation. The amount of silt and its effects on the reservoir, the liability to evaporation, the extent of percolation, the structural security of the dam, and all cognate questions were made subjects of careful and intelligent inquiry. Connected necessarily with the measure for the rectification and establishment of the boundary line, is the benefit to be afforded to our own and the Mexican people in the use of the waters to be stored for the purpose of irrigation, and the restoration, as far as the same could be accomplished, of those ancient and valuable rights of which they are being deprived by reason of the facts mentioned.

It is believed, from statements made by prominent Mexican citizens and the profound interest known to be felt and taken by them in this matter, that such a movement as is here proposed on our part will not only receive their grateful acknowledgment and cordial approval, but that it will be earnestly indorsed by the authorities of their Government, and that they will readily be disposed to participate in the expense involved, should the negotiations contemplated result in any practical execution.

Whatever project may be finally considered the proper one for the settlement of the troubles described, whether the place suggested shall ultimately be adopted, the bill reported will open the way for a thorough international conference and comprehensive consultation concerning the whole matter, the results of which can not be in any sense injurious, but on the contrary give promise of some satisfactory adjustment of difficulties and complications manifestly serious and worthy of earnest consideration. To avoid greater length in this report, a further discussion of the bill is omitted, as it is believed that with the explanations already made a simple inspection of its provisions will enable its scope and purpose to be fully understood. It is accordingly here subjoined:

A BILL CONCERNING THE IRRIGATION OF ARID LANDS IN THE VALLEY OF THE RIO GRANDE RIVER, THE CONSTRUCTION OF A DAM ACROSS SAID RIVER AT OR NEAR EL PASO, TEXAS, FOR THE STORAGE OF ITS WASTE WATERS, AND FOR OTHER PURPOSES.

Whereas the Rio Grande River is the boundary line between the United States and Mexico; and

Whereas, by means of irrigating ditches and canals taking the water from said river and other causes, the usual supply of water therefrom has been exhausted before it reaches the point where it divides the United States of America from the Republic of Mexico, thereby rendering the lands in its valley arid and unproductive, to the great detriment of the citizens of the two countries who live along its course; and

Whereas in former years annual floods in said river have been such as to change the channel thereof, producing serious avulsions, and oftentimes and in many places leaving large tracts of land belonging to the people of the United States on the Mexican side of the river and Mexican lands on the American side, thus producing a confusion of boundary, a disturbance of private and public titles to lands, as well as provoking conflicts of jurisdiction between the two Governments, offering facilities for smuggling, promoting the evasion, and preventing the collection of revenues by the respective countries; and

Whereas these conditions are a standing menace to the harmony and prosperity of the citizens of said countries and the amicable and orderly administration of their respective Governments: Therefore,

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President of the United States be, and he is hereby, authorized to negotiate with the proper authorities of the Republic of Mexico, to the end that these conditions may be improved and the proper correctives applied.

SEC. 2. That he is further empowered to negotiate in the premises for the construction of an international dam across the Rio Grande River in the vicinity of El Paso, Texas, at such point as may be determined upon by competent engineers, to be appointed for that purpose by the respective Governments, with the object of storing the waste waters of said river during the torrential flow thereof, and affording a permanent reservoir for the necessary water supply of the citizens of the two countries who reside in the immediate valley below, having in view the proper definition and protection of their respective rights to the use thereof for irrigation and other purposes, as well as the maintenance of a uniform and steady flow of water in the channel of the stream below said dam, and the direction of its current in such a manner as to insure permanency of the channel in said river as far as the same may be done.

SEC. 3. That he is further empowered to negotiate for the creation of a joint international commission, to consist of not exceeding three persons on the part of each Government, whose duty it shall be to adjust and determine the respective water rights of the citizens of the two countries in and to said reservoir, to mark and define the correct bed or channel of said river, to hear and investigate conflicting claims as to titles to land growing out of the avulsions aforesaid, and report their action and finding thereon to their respective Governments. He may also negotiate concerning any additional authority of said commission touching other matters of an international character between the two countries, the length of its existence, and further definition of its duties.

SEC. 4. That the President is requested to communicate to Congress the result of said negotiations, together with his recommendation thereon, at the earliest practicable opportunity.

FINAL ACTION OF CONGRESS.

CONCURRENT RESOLUTION CONCERNING THE IRRIGATION OF ARID LANDS IN THE VALLEY OF THE RIO GRANDE RIVER, THE CONSTRUCTION OF A DAM ACROSS SAID RIVER AT OR NEAR EL PASO, TEXAS, FOR THE STORAGE OF ITS WASTE WATERS, AND FOR OTHER PURPOSES.

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Whereas these conditions are a standing menace to the harmony and prosperity of the citizens of said countries and the amicable and orderly administration of their respective Governments: Therefore,

Resolved by the Senate (the House of Representatives concurring), That the President be requested, if, in his opinion, it is not incompatible with the public interests, to enter into negotiations with the Government of Mexico with a view to the remedy of all such difficulties as are mentioned in the preamble of this resolution, and such other matters connected therewith as may be better adjusted by agreement or convention between the two Governments.

The President is also requested to include in the negotiation with the Government of Mexico all other subjects which may be deemed to affect the present or prospective relations of both Governments.

Passed April 29, 1890.

No. 2 DUPONT CIRCLE,
Washington, D. C., June 4, 1900.

CHAIRMAN COMMITTEE ON FOREIGN AFFAIRS,
House of Representatives.

SIR: I have the honor to acknowledge receipt of your communication of the 2d instant requesting information in regard to bill H. R. No. 9710, now pending before your committee, and especially as to whether there would be water sufficient, including the flood waters in the Rio Grande, to fill the proposed Elephant Butte Dam and also the International dam and reservoir annually.

In reply I beg to state that this subject was thoroughly investigated and reported upon and results printed in Senate Document No. 229, Fifty-fifth Congress, second session, by a joint commission organized by international protocol, dated Washington, May 6, 1896, signed by Richard Olney and M. Romero, for copy of which see page 34 of the document above referred to and inclosed herewith. The commission as organized consisted of, on the part of the United States, Col. Anson Mills, U. S. A., commissioner; Capt. George McC. Derby, Corps of Engineers, U. S. A., chief engineer; Mr. W. W. Follett, assistant engineer, and Mr. John A. Happer, secretary. On the part of Mexico, Señor Don F. Javier Osorno, commissioner; Señor Don J. Ramon de Ibarrola, chief engineer; Señor Don Alberto Flores, assistant engineer, and Señor Don S. F. Maillefert, secretary. The proceedings of this

commission are quite elaborate; but to assist you in a ready understanding I beg to refer you, by turning down leaves and underscoring, to those portions of the report which will more readily explain and answer the questions asked me.

By reference to page 107 you will see underscored the opinion, as to the water supply, of Assistant Engineer Follett. By reference to page 46 you will see underscored the joint opinion of the two joint engineers of the commission, and by reference to page 39 you will see underscored the opinion expressed by the two joint commissioners, and by reference to page 13 you will see underscored the opinion expressed by myself in a letter dated November 17, 1896, in reply to a communication from the Secretary of State, inclosing letter of the Mexican minister with protest against the erection of a dam by the Rio Grande Dam and Irrigation Company, Limited, signed by Andres Horcasitas and M. Aspiroz, inclosing with the protest a copy of the prospectus of said dam and irrigation company.

During the four years which have elapsed since our report measurements have been taken of the flow of the river at El Paso and above which demonstrate that the annual ratio of decrease has increased over that deduced from the observations in our report; but this was probably caused by a cycle of dry years, so I have no reason to materially change the opinions expressed in the reports above referred to. It will be observed that in the prospectus of the "proposed Elephant Butte Dam" (the Rio Grande Dam and Irrigation Company), see page 6, they claim legal right "to the control of the entire flow of the Rio Grande in southern New Mexico," while the copy of the bill which you were kind enough to inclose me (see page 3, lines 4 and 5) only imposes a restraint of the use of water "to which others have right by prior appropriation." In the absence of any adequate international remedy it occurs to me that under any circumstances this provision in the bill would be unobjectionable and in accord with the general principles of riparian rights.

Yours, very respectfully,

ANSON MILLS,
Brigadier-General, U. S. A. (Retired), Commissioner.

SUPPLEMENTAL TESTIMONY

BY

MR. J. H. M'GOWAN.

SUPPLEMENTAL TESTIMONY BY J. H. M'GOWAN.

WASHINGTON, D. C., *February 25, 1901.*

Hon. J. P. HEATWOLE,

Chairman Subcommittee Considering H. R. 9710,

Washington, D. C.

DEAR SIR: On the 18th instant General Mills discovered that the reference in the second section of the bill to Senate Document No. 229, Fifty-fifth Congress, second session, was an error, and that the reference should have been to a pamphlet entitled "Reports on the investigation and survey for an international dam and reservoir on the Rio Grande del Norte to preserve the boundary between the United States and Mexico by controlling the flood waters of said river."

As the proposed international dam was to be built after certain "plans and specifications" which could only be found by reference, this was an important matter. You then provided that I was to have the use of the only copy of this pamphlet then before the committee (the copy General Mills had), and submit any further suggestions that should occur to me. I therefore beg to state:

1. The pamphlet is not a public document. It was never deposited in the document room of either House. It has no imprint as a public document. So far as I can learn the whole edition, whatever there was of it, was deposited at the State Department. That Department declined to furnish me with a copy, on the ground that it belonged to a class of publications that were not given out. Under my promise to return to General Mills the copy I had, I did not have time to make a completely satisfactory examination. The General has now sent me another copy from the State Department, but I can not delay this communication to make further examinations.

2. There are no "plans and specifications" in this pamphlet from which a dam could be constructed. Between pages 12 and 13 there is a map that contains all the drawings I am able to find that could be designated as plans. These are mere outlines, and relate to two possible sites. The principal part of this map is taken up with a plan of the proposed reservoir. Aside from this there are three small drawings in the margin relating to an upper and a lower dam site. A glance at these shows that they are simply tentative sketches, not plans on which to work out a structure to cost \$2,317,113.36. This map is inserted in a report made by Engineer W. W. Follett to Colonel Mills. At the top of page 12 it is disclosed that Follett submitted with his said report 7 maps in all. Of these, 4 have been gathered onto the map found in the pamphlet. And of the whole number Mr. Follett says: "The work I have done is all preliminary work. It is not intended to show what should be done, but what can be done and approximately the cost of doing it."

Mr. Follett declares on the same page (12) that there are two sites considered by him that are $1\frac{1}{2}$ miles apart, that his figures are based on his surveys of the upper site, although the depth there to bed rock is twice as great as at the lower site. He adds: "It may be that more extended surveys, made with greater care than mine have been, will result in the adoption of this lower site." Then after setting forth that in his opinion a dam built at the lower site would cost considerably less than one built at the upper site, and discussing somewhat the railroad problem involved, as two railroad tracks would have to be moved if the dam and reservoir were constructed, he goes on to say: "This is a statement of the engineering question only, and is an expression of opinion which further surveys and estimates may show to be erroneous," and naively adds: "A consideration of the international problem in connection with the cost may show the lower to be the more available site."

3. All of Follett's estimates are made on the upper site. The dam at this place, he says, would be about 1,000 feet long, and hard bottom could be found from 8 to 50 feet below mean water, the bottom being probably a soft limestone, although the "rod would not ring when churned upon it" (pp. 19 and 20). It is clear the upper dam would be much the most expensive to construct. General Mills, on page 52, makes the upper about 50 per cent more expensive than the lower.

4. Follett gives, on page 30, an estimate of the cost of constructing the upper dam, the reservoir, and moving the two railroads, as follows:

Cost of site for reservoir	\$69, 100. 00
Cost of dam	304, 369. 00
Cost of moving Southern Pacific Railroad	204, 591. 00
Cost of moving Santa Fe	385, 299. 10
<hr/>	
Total	963, 359. 10
Add 10 per cent for administration and incidentals	96, 335. 91
<hr/>	
Grand total	1, 059, 695. 01

Now, I repeat that there is nothing in the pamphlet to which General Mills now desires reference to be made in section 2 in the nature of plans and specifications by which the State Department or any other Department can construct the dam and reservoir with any certainty within the appropriation fixed in the bill. So far as this pamphlet is concerned it shows a scheme without a single definite element. It is all tentative and prospective. If the upper site is chosen, it also involves the cession to Old Mexico of nearly 100 acres of American soil.

I also beg leave to call your attention to the fact that it is clear that at the outset the Mexican Government was expected to contribute one-half of the expense of creating the dam and lake. On page 2 of the pamphlet in question General Mills states the cost of the undertaking at about \$300,000, the two Governments each contributing \$150,000. Again, on page 35, he states that it is the intention of the projectors that the two nations shall share the expense. And at the foot of page 47, in speaking of the Mexican Government, the General uses this language: "There is no doubt, however, that they will approve the project. They propose to bear one-half the expense of constructing the dam, but they claim that inasmuch as we have been depriving them of their vested rights in the water, we should move the railroads and condemn the lands."

I want to also call your attention to the fact that the water to be impounded was not only to be used for irrigation, but also for power, the Americans and Mexicans dividing it for both purposes equally. On page 34, after giving the capacity of the reservoir, the General says: "This (the water) should be divided into three equal parts, one for each side of the river for irrigation and other needs, and the third for overflow through water motors to furnish power to the future manufacturing cities on each side and to maintain a constant flow to the Gulf, as would no doubt be demanded by the people there as their right ere they would permit the scheme to be carried out." And on page 47, in answer to a question by Mr. Hansbrough, while being examined before the Committee on Irrigation, General Mills again indicates that a portion of the water is to be used for creating power.

Another important matter should not be overlooked. Should this reservoir be constructed, its bed would gradually fill up with the silt deposited by the water. This would necessitate either building the dam higher from time to time, or in some way cleaning out its bed. General Mills acknowledges this difficulty, and discusses it somewhat on page 35.

It is further disclosed by this pamphlet and by statements in Document 229, already before the committee, that there is no certainty how far down the engineers would have to go to find bed rock at either of the sites suggested. In one of the documents it is said that the lowest point at which bed rock was reached was something more than 80 feet. In the pamphlet now under consideration Mr. Follett says he finds bed rock at the upper site from 8 to 50 feet below the surface of the water. But the language he uses shows that he is uncertain whether it is such rock as would be available for a stable dam. He tested the matter wholly with rods thrust into the bottom of the river. At each point he may have struck a "float" which would have been disclosed by further soundings, and the bed rock may be much lower down.

That the undertaking is a dangerous one to the people living in El Paso and in the Mexican village on the other side of the river is clearly admitted by testimony given in the pamphlet. General Mills says in response to a question: "Yes; in case of a rupture there would not be much left, I suppose. It would utterly destroy the city and the valley below." As the water is to be 70 feet above the streets of the city, and the reservoir 15 miles long and from 4 to 7 wide, and 60 feet deep in some places, it needs no expert to convince a layman that the experiment is a dangerous one.

Upon the whole, it seems to me that the committee can arrive at no other conclusion than that the measure proposes dangerous and vicious legislation. And as it attacks private rights, which I believe are vested, it is, if I am correct, also unconstitutional.

I am, very respectfully, yours,

J. H. MCGOWAN.

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